10TH EUROPEAN CONGRESS OF SPORT PSYCHOLOGY PRAGUE 1999

PSYCHOLOGY OF SPORT AND EXERCISE: ENHANCING THE QUALITY OF LIFE

PROCEEDINGS PART

CHARLES UNIVERSITY
IN PRAGUE
FACULTY OF PHYSICAL EDUCATION
AND SPORTS

Charles University in Prague
Faculty of Physical Education and Sport

PSYCHOLOGY OF SPORT AND EXERCISE: ENHANCING THE QUALITY OF LIFE

PROCEEDINGS

OF THE 10TH EUROPEAN CONGRESS OF SPORT PSYCHOLOGY - FEPSAC

PART 2

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PSYCHOLOGY OF SPORT AND EXERCISE: ENHANCING THE QUALITY OF LIFE

PART 2

10th European Congress of Sport Psychology Prague 1999

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PREAMBLE

The 10th FEPSAC, European Federation of Sport Psychology Congress held in Prague, Czech Republic was organized by the Charles University in Prague, Faculty of Physical Education and Sport, and by the Czech Association of Sport Psychologists under the auspices of the Ministry of Education, Youth and Physical Education of the Czech Republic.

The Proceedings Part 1 and Part 2 present keynote addresses and reviewed contributions of oral presentations, workshops and posters. The keynote addresses are published at the beginning of the Proceeding in Part 1. The scientific papers are ordered alphabetically, using the name of the first author. The contributions are published as the Science Committee received them. The authors are completely responsible for the form and the content of their presentations.

The Proceedings books reflect the main theme of the Congress: **Psychology of Sport and Exercise: Enhancing the Quality of Life** and the main topics and sub- topics as they are outlined in the Congress program.

Congress main-topics

1. Physical activity and the quality of life
2. Perception, cognition and group dynamics in action
3. Diagnostics, prognostic and intervention
4. Motor learning of sport skills
5. Sport psychology and the disabled individuals
6. Psychological aspects of sports management
7. Retirement from sport
8. Psychology of counselling and coaching in sport
9. Ethical issues in psychology of sport, Olympic ideas

Congress sub-topics

g) Social and organisational aspects of sport behaviour
h) Psychosocial development across the life span sport
i) Enhancing sport performance
j) Psychological aspects of health promotion
k) Physical activity and the self
l) Ethical and professional issues

The Science Committee received almost 300 submissions from sport psychologists from forty different countries. Most of the submissions were accepted for presentation, but only those papers, which met formal, methodological and relevancy criteria were published in the Proceedings books. It is our believe that the information and ideas from the submissions, which used methods relevant only to oral presentations have contributed to the scientific discourse of this congress.

The editors would like to express their gratitude to all reviewers for their work and to all presenters for their scientific contribution to the 10th FEPSAC Congress. The quality of presented work demonstrates a very exciting development in our discipline.

We hope that our meeting in Prague contributed to the advancement of sport psychology and to the start of new personal and professional friendships.

The Editors,

Václav Hošek, Pavel Tilinger, Luboš Bílek

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Part 2

CONGRESS PRESENTATIONS

PSYCHOLOGICAL OR MENTAL PREPARATION :

A COMPARATIVE ANALYSIS

Marc LEVEQUE, University of Orléans,France
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KEY-WORDS

Psychological preparation ; mental preparation ; counselling ; intervention

INTRODUCTION

The purpose of this presentation is to compare these two forms of preparation (concerning goals, methods, moments, ways for learning and applying, philosophy...) .Such a comparison shows, from our point of view, that coaches and athletes need to differenciate what sort of services are delivered ; they need to better identify their requirements in order to improve themselves at each moment of their work,

Scientific contributions do not consider, generally, that this differenciation is important ; researchers or practicians often use one term or the other or one term for the other, they do not need to specify the choice and the use of such or such terminology ever since they utter in a particular professional environment

We can also observe that different uses refer to the prevalent conceptions in the country or in the part of the world where each researcher is working (in North America : psychological skill training or mental training (Williams,1986), in Germany : psychological training (Seiler,1992), while in France or in Italy(Rossi,1993) psychological preparation is more frequent

The interest to go deeper in this comparison is not a semantic one ; in fact, words are the obvious part of practical intentions, in the same way different practices are linked to different conceptual points of view

Our development (Leveque and Heuze, 1998) will try to enumerate a range of criteria and to explain what sort of differences we can admit between Psychological Preparation and Mental Preparation. Then we shall discuss our presentation and try to conclude

ABOUT DIFFERENCES

Psychological preparation (P.P) is quite independant of performance planning, while Mental Preparation (M.P) refers to competition enhancement and performance achievement

P.P. is concerned with adaptation of the athlete in the training environment, that is to say the social link between the athlete and every kind of human,, physical, logistic or institutional interactions.It is holistic and it deals with a lot of factors considered in an interactional approach

P.P aims at optimizing the way each athlete can feel congruent and positive with specific surroundings On the opposite, M.P.is absolutely task-centered and fully oriented towards efficiency and peak performance

P.P depends on psychological circumstances and personal psychic climate. A subjective evaluation is carried out by the athlet about his objective conditions of life. In fact at each moment of a sport career, from the beginning to the transition at the end and retirement, an athlet may need to be helped in a psychological relationship. .

M.P.is determined when competition is approaching, it is focused on motor improvement ; it must be planed and rehearsed very frequently during training moments

P.P keeps on the first rank, affective and relational variables, (for example self-confidence, or communication problems, coach-athletes relationship...), while P.M. refers to behaviour, especially motor and cognitive aspects (i.e concentration, stress management or breath control...)

P.P requires a third person interested in providing the athlete some help to talk, to wake him up to the awareness of difficulties or conflicts.The goal is to obtain a deeper analysis of ihis own position about sport participation, personal involvement, relationship with family...

M.P needs some specialists to teach technics (like imagery, relaxation...) but the goal is to allow the athlete to apply, by himself, when competition is approaching, the strategy he was learning before

M P aims at self-control and focus of awareness, in order to improve the transfert of motor abilities (Vealey,1988) from training to competition

To be efficient M.P certainly requires a certain modification of the « being aware »state of mind (Le Scanff,1995) so as to forget interferences, but also to master the space-time connection link. This very change of the athlete's awareness will make up the efficiency of « mental work », but also its risks and deviancies (mysticism, magical belief, losing one's identity...)

In fact we could consider that both forms of preparation refer to an ideal, but of different kinds. For P.P., the ideal is more educational and humanistic, it concerns well-being, quality of life and optimal adaptation to a specific way of life. For .M P, the ideal is a positive state (peak performance, ideal state of performance, flow, individual zone of optimal functioning...) »a state of grace », a perfect body and mental feeling that the athlete wants to find or to rediscover

DISCUSSION

P.P is closed to a broad-spectrum approach, where a lot of external conditions keep in interaction in the sport system.The way the athlete experiences his own situation in this environment, the meaning he gives to his involvment is considered as most proeminent.

PP refers to intrapsychic possibilities to cope with competition stressors, it deals with the possibility to give more value to abilities and motor skills

Although our analysis tried to show differences, P.P and M.P are not opposite, but complementary. We think that, on a time scale, P.P is prior to P.M, it creates favourable conditions to ease « mental work », it is a preparatory stage.

Let us give the example of a solution of continuity between these two procedures : the fact of regulating motivation and the conduct of goals may be the subject of interpersonal exchanges, of deepening into the plan of appropriating it.

More closely to competition, firm decisions are subjected to a concrete work in mental visualization so that to reinforce their probability of achievement

Because of its systematical aspect and its connections with techniques, M.P sets out risks of standardization and technicization, of normative instrumentation. Its efficiency will not depend on the technique that was used or on the numbers of repetitions, but on the degree of motivation of the athlete to take advantage of it. The initial psychological preparation will enable him to adapt these techniques to his needs and to his plan.

It would be useless, to our minds, to set an athlete a mental training if he is gnawed and invaded by doubt, or left in a state of uncertainty about the interests and the goals of his sports efforts.First, this very athlete must be helped to clarify the sense and the reasons of his uncomfortable situation.That is the reason for which an individuality centered conduct of M.P must be pursued ; this conduct will be based on a regular harmonization of psychological conditions of sport practice

REFERENCES

Jackson, S.A, Roberts, G.C.(1992).-Positive performance states of athletes : toward a conceptuel understanding of peak performance. **The sport Psychologist**, ,6, 156-171

Le Scanff,C.(1995).-**La conscience modifiée**. Paris : Payot,

Leveque,M.Heuze,J.P(1998)Préparation psychologique et/ou Préparation mentale : une analyse comparative.**Entraînement mental et sport de haute performance**.Insep,Paris,41-68

McInman,A.D. Grove,J.R(1991)Peak moments in sport a littérature review.**Quest**,43, 333-351

Rossi B. (1993). Analogies and différences in psychological préparation for olympic games in two différent gold medal teams- **Proceedings 8°World Congress of Sport Psychology**. S.Serpa, J.Alves,V.Ferreira et A.Paulo-Brito(Eds).Lisbon ISSP/SPPD/Faculdade de Motricidade Humana, 292-295

Rivolier,J.1992).-**Facteurs humains et situations extrêmes**-Paris : Masson

Seiler,R.(1992) Performance enhancement-A psychological approach. **Sport Science review**,1(2),.29-45

Vealey,R.S.(1988) Future directions in psychological skills training.**The Sport Psychologist**, ,2,.318-336

Weinberg,R.S. Gould,D.(1995) **Foundations of sport and exercise psychology**. Champaign,Il : Human Kinetics

Psychological and developmental perspectives in talent detection processes: A retrospective study

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Key-words: talent detection, retrospective study, elite athletes.

INTRODUCTION

The very initial phase of any sport program is talent detection. It is a well-accepted assumption among sport scientists, coaches, managers, etc., that the more talented the young athlete, the stronger the chances that he/she will reach the summit. However, although talent detection is a valuable process in a multi-step sport program, it has not received the amount of attention it deserves (Matsudo, 1996).

The talent detection phase typically includes measurement and evaluation of three main variables: physiological, psychological, and sociological (Fisher & Borms, 1990; Regnier, Salmela, & Russell, 1993). It is true that above and beyond these variables the natural ability of the young athlete is the most important factor which influences his/her future sport achievements. However, coaches and physical educators find it valuable to use physiological, psychological and sociological tests to search for the gifted child.

To facilitate the use of the measurements which could potentially influence the development of a gifted child in sport, it is recommended to interview the individuals who have reached the highest level of performance in their field. More specifically, a retrospective study (e.g., Bloom, 1985; Hemery, 1986) can be applied to examine the perspectives of elite athletes during their initial steps within their sport activity.

An attempt was made in this retrospective study to explore some psychological and developmental perspectives of the highest-skilled and the less-skilled Israeli elite athletes in individual and team sports, particularly during their very first sport experiences.

METHOD

Participants

One hundred and forty-one elite athletes participated in this study. Sixty-three were Olympic athletes who were also active on the national teams. The others (n=78) competed at the highest national level, but were not members of the national teams.

The Questionnaire and the Interview

The participants were interviewed based on a semi-structured questionnaire (Thomas & Nelson, 1996) that was developed by the experimenters. The questionnaire was given to five experts in the area of exercise and sport sciences, and to five elite athletes (who were not included in the sample of the study) for a review process prior to its administration to the participants. The comments made by the experts and the athletes assisted in establishing the validity of the questionnaire.

The questionnaire consisted of two parts: (a) demographic information (a 10-item set) in order to obtain background data such as gender, date of birth, sport occupation, family status, etc.; (b) developmental and psychological perspectives (a 21-item set) of the athletes on the early stages of their career development.

Procedure

Before the interview took place, all participants completed an informed consent form. The interview was scheduled according to the participant's priorities, and was conducted before one of the practice sessions of the participants in a separate room.

Data Analyses

The data obtained from the interview were grouped according to the proposed questions. This information was analyzed using qualitative measures (Thomas & Nelson, 1996).

RESULTS

A summary of the data obtained in this study is presented in Tables 1 and 2.

Table 1. Demographic Information.

Variable	Elite Athletes	Near-Elite Athletes
Sample size	63	78
males	46	60
females	17	18
Mean age (standard deviations)	27.3 (6.0)	25 (5.83)
Individual sports	36	39
Team sports	27	39
Living Area:		
city	50	56
country	9	17
kibbutz	4	5
Family Status:		
single	39	63
married	24	14
widowed		1

Table 2. Developmental and Psychological Perspectives.

Variable	Elite Athletes		Near-Elite Athletes	
• Age of exposure to sport activity	46% between 5 and 11 54% above 11		69% between 3 and 12 31% above 12	
• Age of practice initiation	32% between 5 and 11 68% above 11		64% between 3 and 12 36% above 12	
• Number of sports performed in the early years	only one more than one	30% 70%	only one more than one	42% 58%
• Influences in involvement in sport	physical educator coach family friends athlete him/herself	11% 8% 48% 13% 20%	physical educator coach family friends athlete him/herself	12% 16% 33% 16% 20%
• The family as a support source	yes no	71% 29%	yes no	85% 15%
• Types of support provided by the family	psychological support financial support	45% 59%	psychological support financial support	54% 46%
• Coach served (also) as a "psychologist"	yes no	68% 32%	yes no	73% 27%
• Source of motivation in early years	extrinic intrinsic	13% 87%	extrinic intrinsic	32% 68%
• Success in both staying in school and excelling in sport	yes no	95% 5%	yes no	95% 5%
• Overall satisfaction from early years in sport	yes no	16% 84%	yes no	5% 95%

• Psychological recommendations given by the gifted athletes	consistency	20%	consistency	15%
	effort	21%	effort	12%
	having fun	20%	having fun	13%
	focusing on one sport activity	10%	focusing on one sport activity	7%
	other	29%	other	57%
• Most important psychological traits	talent	31%	talent	14%
	consistency	30%	consistency	30%
	motivation	16%	motivation	33%
	a will to win	16%	a will to win	10%

DISCUSSION and CONCLUSIONS

The purpose of this retrospective study was to explore the developmental and psychological perspectives of elite and near-elite athletes on their early years in sport.

Based on qualitative analyses (Thomas & Nelson, 1996), a number of observations can be made:

- The demographic information of the two groups of individuals was similar, e.g., age, living area, and family status.
- The two groups initiated their involvement in sport in a similar age. Furthermore, they were also exposed to sport activity at the same age.
- Both groups were provided with family support. However, the elite athletes were given more financial than psychological support compared with the less-skilled, who were provided with more psychological than financial support.
- For both groups, the coach not only taught the techniques and the tactics of the activity, but also showed interest in other aspects of his/her athletes, such as education, psychological mood and family matters.
- The elite athletes were more intrinsically motivated to excel compared with the near-elite athletes.
- The elite athletes placed a greater emphasis on "psychological characteristics", such as consistency in training, effort, having fun and willing to win, compared with the near-elite athletes.

REFERENCES

Bloom, S. B. (Ed.). (1985). Developing talent in young people. New York: Ballantine Books.

Hemery, D. (1986). Sporting excellence: A study of sport's higher achievers. Champaign, IL: Human Kinetics.

Fisher, R. J., & Borms, J. (1990). The search for sporting excellence. Schorndorf: Verlag Karl Hofman.

Matsudo, V. K. R. (1996). Prediction of future excellence. In O. Bar-Or (Ed.), The child and adolescent athlete (pp. 92-108). Berlin, Germany: Blackwell Science Ltd.

Regnier, G., Salmela, J., & Russell, S. J. (1993). Talent detection and development in sport. In R. N. Singer, M. Murphey & K. L. Tennant (Eds.), Handbook of research on sport psychology (pp. 290-313). New York: Macmillan.

Thomas, J. R., & Nelson, J. K. (1996). Research methods in physical activity (3rd ed.). Champaign, IL: Human Kinetics.

Developing indexes of efficiency in basketball: Where is the spirit of the team?

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Key-words: idnex of efficiency, ball games, basketball.

INTRODUCTON

Achieving a high level of proficiency in ball-game activities such as basketball depends upon (a) the technical skill level of the individual within the team and of the whole team, and (b) the psychological edge, or as coaches call it "the spirit of the team" (Wooden, 1980). The assumption is that a combination of the two factors will result in a better team performance, e.g., ranking high in a tournament. However, is it possible to predict a final placing of a team based on its technical and psychological edges? In other words, is it possible to develop appropriate indexes to measure team ability and predict its final success?

There have been some attempts in the literature to develop indexes of efficiency which reflect the prominent technical fundamentals of a ball-game, e.g., basketball (Fusukawa, 1974; Lidor & Arnon, 1997; Spurgeon, Spurgeon, & Giese, 1980). These indexes attempt to examine the contribution of some technical variables of the game to the final success of the team. For example, the prediction of the final placing of a basketball team based on these indexes is somewhat limited due to the fact that it consists only of the technical aspect of the game, and neglects the psychological one.

Typically, the discussion on the contribution of the development of indexes of efficiency in ball-games is limited to the technical side of the game. An attempt was made in this study to further examine the utilization of indexes of efficiency in basketball, and mainly the "hidden" relationships with some psychological phenomena of the game. For this purpose, the data obtained from the 1994 European Basketball Championship for male players under 19 years of age were analyzed. Indexes of difficulty and correlational analyses were calculated on a variety of variables related to the game.

METHOD

Participants

One-hundred and forty-four basketball players participating in the final stage of the European Basketball Championship for teams under 19 years of age, took part in the study. The players were aware of the fact that some "statistical measurements" concerning their playing ability were being recorded during each game of the championship.

Procedure

Twelve basketball teams from all over Europe took part in the final stage of the European Basketball Championship for teams under 19 years of age. Each team played seven games in nine competition days. A trained crew of observers prepared a statistical report on each team for each day of the championship which included quantitative information on the: (1) number of points scored by the team, (2)

percentage of success of 2-point shots, (3) percentage of success of 3-point shots, (4) percentages of success of free-throw shots, (5) number of fouls made by the team, (6) number of defensive rebounds taken by the team, (7) number of offensive rebounds taken by the team, (8) number of turnovers by the team, (9) number of steals by the team, (10) number of assists by the team, and (11) number of blocks made by the team. Statistical reports were collected for each game played during the championship.

Data Analyses

The data collected in this study reflected the technical ability of all players, and consequently the total playing ability of each team. Means and standard deviations were calculated for each technical variable of each team. Based on these data, two indexes of efficiency were developed (Fusukawa, 1974):

(1) Index of playing ability = (C)

$C = A \times B$, where

$$A = \frac{\text{the number of successful shots}}{\text{(successful shots) + (unsuccessful shots)}}$$

$$B = \frac{\text{rate of supply}}{\text{(rate of supply) – (turnovers + violations)}}$$

rate of supply = defensive + offensive rebounds

(2) Index of shooting ability = (D)

$$D = \frac{\text{number of successful shots}}{\text{(number of successful shots) + (unsuccessful shots by the opposing team)}}$$

The C and D indexes were calculated for each team. These indexes were correlated with two variables: (1) the final placing of the team, and (2) the average height of each team. In addition, all other technical variables for each team, including the average height of the team, were correlated. Pearson product-moment correlations were used in order to examine: (a) the relationships among the final placing of the teams and the indexes of efficiency, and (b) the relationships among the technical variables collected during this tournament.

RESULTS

The correlational analyses are presented in three parts: correlations related to the indexes of efficiency and final placing of the teams; correlations related to the variable of height; and correlations related to the technical variables collected during the 9-day championship.

Indexes of efficiency. The correlation between the C index and the final placing of the teams was significant, $r = .85$, $p < 0.001$. The correlation between the D index and the final placing of the team was not significant. In addition, the correlation between C and D was not reliable.

Height and other variables. The variable of height was not found to be significant with any other index or variable.

Technical variables. Among the 91correlations calculated, 17 were found to be significant. Among the significant correlational relationships were: the number of points scored by the team and the number of blocks made by the team ($r = .60$, $p < 0.05$); the number of defensive and offensive rebounds and the number of points scored by the team ($r = .72$, $p < 0.01$); the percentages of success of 2-point shots and

the number of assists of the team ($r = .69$, $p < 0.05$).

DISCUSSION and CONCLUSIONS

An attempt was made in this study to examine the relationships between indexes of difficulty and technical variables in the game of basketball. The main assumption was that these indexes are highly correlated with the final placing of the team. In other words, the prediction of the final placing of a team would probably be more accurate.

The correlation between index C and the final placing of the team was reliable. Index C includes technical variables such as the number of successful shots, unsuccessful shots, defensive and offensive rebounds, turnovers and violations. This index reflects the balance between the positive and negative elements of the game of basketball. Logically speaking, the greater the gap between the positive and the negative elements of the game, the greater the rate of success achieved by the team. Index C provides mathematical support for this logical assumption.

Index D and the height variable were not correlated with the final placing of a team. This means that shooting alone cannot predict the success of the team, no matter how much the players are talented in this skill. Furthermore, it is believed that the taller the players, the more chance the team has to win. However, height alone cannot promise a certain advantage in basketball.

The correlational analyses among the technical variables of the game did indicate some reliable relationships. These relationships can provide useful information for both coach and player on which fundamentals of the game should be focused upon. There are too many technical fundamentals in basketball, and the coach may not have the time to spend on each one. Thus, if more time is spent on certain specific technical variables, the total playing ability of the player and the team can be improved.

If it is not possible to predict the final placing of a basketball team based only on analyses of the technical variables of the game, then what it should be determined other factors may serve the coach. It is suggested that the "hidden" aspect of the game, e.g., the mental and psychological processes of the individuals within the team and of the team itself, can provide more in-depth information in order to increase the prediction of the final place of teams in ball-games. Understanding of the "spirit of the game" may enable coaches and players to fulfill their potential and to reach a higher level of performance than predicted.

REFERENCES

Fusukawa, M. (1974). A study on the characteristics of basketball games seemed from players' heights at the Tokyo and Mexico Olympic games. Research Journal of Physical Education, 6, 351-366.

Lidor, R., & Arnon, M. (1997). Correlational relationships between technical variables and final placing of basketball teams. Coaching and Sport Science Journal, 2, 39-47.

Spurgeon, J. H., Spurgeon, N. L., & Giese, W. K. (1980). Physique of world-class female basketball players. Scandinavian Journal of Sport Sciences, 2, 63-69.

Wooden, J. R. (1980). Practical modern basketball (2nd ed.). New York: John Wiley & Sons.

TEAM COHESION AND COMPETITIVE STATE ANXIETY
- All for one and more stress for me?

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KEY-WORDS: Coacting, cohesion, interacting, state anxiety, team anxiety

INTRODUCTION

The science of group dynamics in sport often deal with areas of group leadership, composition, size and cohesion. However, studies investigating the team cohesion and its influence on and relationship to stress and anxiety have been surprisingly neglected during the relatively short history of group dynamics in sport. High team cohesion is thought to lead to an increased individual satisfaction, but how does cohesion affect the individual anxiety level and stress prior to games Perhaps it is due to the fact that studies and theories of anxiety and stress almost only have focused on the individual aspects of anxiety and not the group or cohesion part of it. However, as Hanin[1] states: " A social psychological approach of the study of stress and anxiety in sport requires the investigation of both new and traditional concepts. For example, anxiety may be evoked by the perception of danger or threat not only to an individual but also to his/her partners and the group as a whole" (p.27). High cohesion in groups has earlier generally been connected with decreased individual anxiety (Julian,Bishop & Fielder, 1966; Shaw, 1981, Cartwright, 1982, in Carron[2]). It has also been found that coacting team members, in most studies, exhibit a lower level of cohesion than interacting team members (Carron & Chelladurai[3] and Gill[4] a.o).

In a recent study, Prapavessis & Carron[5] investigated the two multidimensional constructs of cohesion and anxiety and particular subcomponents of the two constructs. They found that cohesion was related to A-state responses. The variables that contributed most to this relationship turned out to be individual attraction to group- task (ATG-T) and the cognitive A-state. Individuals higher in perception of ATG-T experienced less cognitive A-state prior to competition.When investigating the psychological costs and benefits associated with membership in cohesive groups, they found that perceptions of the psychological costs associated with membership on cohesive teams mediates the cohesion-competitive A-state relationship. The main purpose of this study was: (a) to investigate the levels of, and differences in team cohesion and competitive state anxiety in co-acting versus interacting teams, and (b) to investigate the relationship between sub-components of the two multidimensional constructs of team cohesion and competitive state anxiety. The secondary purposes of the study was to construe a model that describes how the two multidimensional constructs relate to eachother.

METHOD AND PROCEDURE

The sample in this study was comprised of 46 male and 32 female athletes in interacting and co-acting intercollegiate university (focusing on sport science and teaching) teams in England. The interacting team sports included in the study were: football (n= 27 males) volleyball (n=12

1 Hanin,Y.L. (1989). Interpersonal and intragroup anxiety in sport. In J.M. Silva & R.S. Weinberg (Eds.), Psychological foundations of sport (pp. 315-328). Champaign, IL:Human Kinetics.

2 Carron, A.V. (1988). Group dynamics in sport. London, Ontario:Spodym

3 Carron, A.V & Chelladurai, P. (1981). The dynamics of group cohesion in sport. Journal of Sport Psychology, 3, 123-139

4 Gill, D.L. (1984). Individual and group performance in sport. In J.M. Silva & R.S. Weinberg (Eds.), Psychological foundations of sport (pp. 315-328). Champaign, IL:Human Kinetics.

5 Prapavessis, H & Carron, A.V. (1996). The effect of group cohesion on competitive state anxiety. Journal of Sport ans Exercise Psychology, 18, 64-74.

females) and basketball (n=10 females). The coacting team sports involved were: track & field (n= 8 males and 5 females), swimming (n=5 females and 7 males) and tennis (n=4 males). The total number of missing cases in the interacting group were 5, and the number of missing cases in the coacting group were 13. Two instruments were employed in the present study: a modified version of the Mental Readiness Form (MRF; Murphy, Greenspan, Jowdy & Tammen, 1989) and the Group Environment Questionnaire (GEQ; Carron et al., [6]). The MRF was choosen due to the fact that it can be completed in a shorter period of time than the CSAI-2.The GEQ was picked because it is the most commonly used measurement of team cohesion, and that it has high documented validity and reliability (Widmeyer et., al, 1985[7] and Widmeyer et al.,1993[8]). To gather data from both interacting and coacting teams, various teams within the university and specifically its team captains or coaches were contacted by phone in April 1998. After the teams and its captains/ coaches agreed on taking part in the study, the inventories were handed out to the team captains together with instructions (both verbally and written down) about the filling in process. The GEQ was completed when the teams gathered before the competition/match, i.e. 2-3 hours before the competition/game, while the MRF was completed 5-30 minutes prior to the actual game/competition start.

RESULTS

A one-way ANOVA revealed that members of interacting teams scored significantly higher on the ATG-T-scale, $F(1, 76) = 6{,}99$, $p = .01$) the GI-T scale, $F(1, 76) = 16.738$, $p < .001$), and the ATG-S scale, $F(1, 76) = 3{,}857$, $p < .07$).

Table 1. Means and Standard Deviations comparing cohesion of interacting and coacting team members

		ATG-S	ATG-T	GI-S	GI-T
Interact.	Mean	33.49	29.22	23.43	33.45
	N	49	49	49	49
	StD	6.39	4.82	6.70	5.52
Coact.	Mean	30.34	25.55	20.00	27.66
	N	29	29	29	29
	StD	6.96	6.16	6.62	6.63

The most interesting intercorrelations between the MRF variables and the GEQ variables were (all correlations are significant at the 0.05 level):Age- ATG-T= .380, age- GI-S= .254, age- GI-T= .291, active years- Cognitive anxiety = -.349, active years- Self-confidence = -.416, ATG-S- Direction of Somatic anxiety = -.201,ATG-T - Team anxiety = -.198, ATG-T- Direction of team anxiety = .203, GI-T- Somatic anxiety = .290.

A multiple regression revealed that the variables team anxiety and team anxiety direction significantly ($F(2, 77) = 5.97$, $p < .01$) accounted for 11.4 % of the variance in the confidence

variable, with the team anxiety variable as significant (Beta = .387, $p < .001$).The same variables, team anxiety and team anxiety direction, also significantly ($F(2, 77) = 5.65$, $p = .005$) explained 10.8% of the dependent variable cognitive anxiety.

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6 Carron, A.V., Widmeyer, L.R, & Brawley, L.R. (1985). The development of an instrument to assess cohesion in sport teams: The group environment questionaire, Journal of Sport Psychology, 10, 119-126.

7 Widmeyer, L.R., Brawley, L.R, & Carron, A.V. (1985). The measurement of cohesion in sport teams : The group environment questionnaire, London,Ont: Sports Dym.

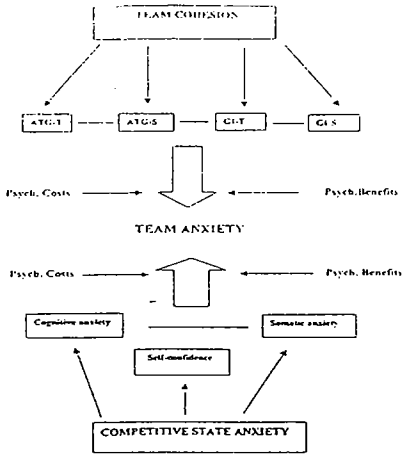
8 Widmeyer, L.R, Carron, A.V, & Brawley, L.R. (1993). Group cohesion in sport and exercise. In Singer, R.N., Murphey, M, & Tennant, L.K. Handbook of research on sport psychology. NY: Macmillan Pubslishing Company

DISCUSSION AND CONCLUSION

The results show that interacting team members did have a higher team cohesion, demonstrated in significantly higher scores on the three GEQ variables ATG-S,GI-T and ATG-S. Thus, the results in this study supports the previous findings of Carron & Chelladurai (1981) and Gill (1984), amongst others. Plausible explanations to why the interacting and coacting team members differ in team cohesion are: different task type and hence different demands on degree of interdependence in the team, different norms and attitudes in the teams due to the different task-types and different a) environmental factors, b) personal factors and c) team factors influencing the teams and its members.

In contrary to the findings of Prapavessis & Carron (1996) that individuals with higher attraction to group-Task (ATG-T) experienced less cognitive state anxiety prior to competition, the results in this study did not indicate on such relationship.Cognitive state anxiety did not significantly correlate to any of the four cohesion variables. However, the strongest correlation between a cohesion variable and a anxiety variable was found between somatic anxiety and and group integration-Task (r = .29), indicating that a higher perceived group integration leads to higher somatic anxiety. On the other hand, supporting the previous findings of Prapavessis and Carron (1996), the two negative correlations between ATG-S and direction of somatic anxiety (r = .-201), ATG-T and team anxiety (r= .-198), and the positive one between ATG-T and direction of team anxiety (r= .203), indicates that a high individual attraction to the group and it's task leads to a a perceived low team anxiety and that this team anxiety is interpreted positively.

A plausible cause for this could be the psychological costs versus benefits that are connected to membership in a cohesive team (Prapavessis & Carron (1996).It is conceivable that individuals who perceive their team to have a high team cohesion, and good team atmosphere, instead of gaining from beneficial consequenses of for instance diffusion regarding responsibility, feels increased pressure to live up to their teammates expectations and to conform to the groups norm, rules and attitudes, i.e the negative aspects of the group. To conclude,in order to produce a possible over-view over the connection between the two main concepts in this study, state anxiety and team cohesion, a model of the relationship and integration of the concepts is here presented. Hence, the dynamical quest for knowledge within this area goes on.



Model 1. The psychological benefit and costs-influenced integrated cohesion and state anxiety model (Lindwall, 1998)

SELF-ESTEEM AND PERCEIVED FITNESS OF ACTIVE AND SEDENTARY ADOLESCENTS: A FOLLOW-UP STUDY

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KEY WORDS: Perceived physical competence, exercise, physical activity, change, selection

INTRODUCTION

There are principally two models dealing with the relationship between physical activity and psychological well-being – the change model and the selection model. The effects of exercise on psychological well-being are hard to study experimentally because the idea of using placebo groups in exercise studies turns out, in practice, to be impossible. It is possible, however, to avoid some of the problems of experimental studies and to bolster both the change and selection models by following the natural history of habitual physical activity in children longitudinally and grouping them afterwards according to registered activity patterns. The aim was to study the possible changes and differences in self-perceptions among very active, active and sedentary adolescents with annual measurements over a four-year follow-up period.

METHOD AND PROCEDURE

The subjects were 11 years of age at the first annual measurement. After the follow-up period the participants (n=88) were separated into sedentary (15 boys, 20 girls), physically active (20 boys, 10 girls), and very active (15 boys, 8 girls) groups. Perceived physical competence was measured by Lintunen's (Lintunen et al., 1995) Perceived Physical Competence Scale, which yields scores on two sub-scales, Perceived Fitness and Perceived Appearance. Self-esteem was assessed by using a modification of the Rosenberg Self-Esteem scale with 8 of the original 10 items.

RESULTS

Perceived fitness: Girls. According to Manova analyses, a significant main effect was found for physical activity group ($P = .001$), but not for age ($P = .227$) or interaction between group and age ($P = .637$) (Table 1). Activity group effects: Univariate F-tests (one-way-analyses of variance) revealed that at the first measurement at age 11 perceived fitness did not vary between the groups ($P = .328$), but significant differences were observed later at the ages of 12 ($P = .002$), 13 ($P = .005$), 14 ($P = .002$), and 15 ($P = .001$). At these ages in which significant differences were found the means were subject to a modified LSD multiple comparison test. These tests showed that the sedentary girls had lower perceived fitness than the very active girls at all the ages of 12 ($P < .01$), 13 ($P < .01$), 14 ($P < .01$) and 15 ($P < .001$) and lower perceived fitness than the active girls at age 12 ($P < .05$). The perceived fitness of the active and very active girls did not differ significantly at any age. Thus, active and very active girls combined were compared with sedentary girls using contrast procedures. The physically active and very active girls showed higher perceived fitness than the sedentary girls at the age 12 ($P = .001$), 13 ($P = .002$), 14 ($P = .001$), and 15 ($P = .000$), but not at age 11 ($P = .219$).

Perceived fitness: Boys. Significant main effects were found for physical activity group (P = .020) and age (P = .014) but not for interaction between group and age (P = .634) (Table1). Activity group effects: The univariate F-tests revealed that at ages 11 (P = .081) and 14 (P = .113) perceived fitness did not differ significantly between the physical activity groups, but there were significant differences at ages 12 (P = .026), 13 (P = .031), and 15 (P = .054). The modified LSD multiple comparison test revealed that the sedentary boys had lower perceived fitness than the very active boys at the age of 12 (P <.05), and 15 (P <.05). After that, the active and very active boys were compared with sedentary boys using contrast procedures. The physically active and very active boys showed higher perceived fitness than the sedentary boys at every age: 11 (P = .026), 12 (P = .007), 13 (P = .009), 14 (P = .052) and 15 (P = .033). Age effects: The boys showed a tendency toward an increase in perceived fitness during the follow-up years. The differences between successive measurements (ages) were studied using univariate F-tests (repeated contrasts). The only statistically significant change was that perceived fitness increased from age 11 to age 12 (P = .008).

TABLE 1. Perceived Fitness in Different Age, Gender, and Exercise Activity Groups

		Girls			Boys		
	Age	*Mean*	*SD*	*n*	*Mean*	*SD*	*n*
Sedentary	11	23.8	4.2	20	23.3	4.1	15
Active		25.0	2.9	10	25.5	3.1	20
Very active		26.3	3.9	8	25.7	2.5	15
Sedentary	12	23.6	3.3	20	23.8	3.3	15
Active		26.0	1.7	10	26.7	3.7	20
Very active		27.6	2.2	8	27.1	3.6	15
Sedentary	13	23.5	2.9	20	24.3	2.9	15
Active		25.9	4.0	10	26.7	3.3	20
Very active		27.9	2.5	8	27.0	2.7	15
Sedentary	14	23.2	3.4	20	24.9	2.8	15
Active		25.6	3.3	10	26.2	2.8	20
Very active		28.3	2.1	8	27.1	3.2	15
Sedentary	15	23.6	3.6	20	25.0	3.0	15
Active		25.9	2.2	10	26.4	3.3	20
Very active		28.5	1.6	8	27.9	3.1	15

Perceived appearance: Boys and Girls. Perceived appearance did not differ between the physical activity groups (main effects for girls P = .853; for boys P = .382), and did not change during the follow-up period (main effects for girls P = .683; for boys P = .231). There was no interaction between group and time either among the girls (main effect P = .371) or among the boys (main effect P = .631). Self-esteem: Girls. Self-esteem from the age 12 to 15 did not differ between the physical activity groups (P = .679), did not change during the

follow-up (P = .084), and no interaction was found between group and age (P = .931). The sum index of self-esteem at age 11 was not included in the follow-up analysis, because the items of the scale were dichotomous. The univariate F-tests revealed that at age 11 self-esteem did not differ significantly between the physical activity groups (P = .638). Self-esteem: Boys. According to Manova-analyses self-esteem from the age of 12 to 15 years did not differ between the physical activity groups (P = .087), and there was no interaction between group and age (P = .928). The main effect of age was significant (P = .011). According to univariate F-tests (repeated contrasts) self-esteem of the boys increased from the age of 14 to 15 (P = .015). Univariate F-tests revealed that at the age of 11 years self-esteem did not differ significantly between the physical activity groups (P = .157).

DISCUSSION AND CONCLUSIONS

The results for the girls correspond to the change model. No differences in perceived fitness were found at the beginning of the follow-up period at the age of 11 between the sedentary, active and very active groups. During the later years, however, the two physically active groups of girls had higher perceptions of their fitness than the sedentary girls. These results lend support to the view that exercise increases perceptions of physical competence. The two physically active groups of boys had higher perceptions of their fitness than the sedentary group both at the beginning as well as during the follow-up years. Whether the differences which already existed in perceived fitness among the boys at the age of 11 were due to selection or change is questionnable, as these boys had been involved in organized sports for an average of two years before the beginning of the study.

No differences were found in self-esteem among the three activity groups, either among the girls or among the boys, even though an increase in self-esteem in the physically active groups was anticipated according to Sonstroem and Morgan's Exercise and Self-Esteem. This result is, however, in accordance with earlier cross-sectional studies where athletes have demonstrated higher perceptions of physical competence but no or minor differences in self-esteem when compared to nonathletes (Marsh & Jackson, 1986; Marsh & Peart, 1988). The placebo or Hawthorne effect may be responsible for the increase in self-esteem observed after the intervention studies. Exercise is probably not a very effective way to enhance self-esteem, which has been shown to be very stable already during early adolescence (Lintunen & al., 1995). At its best, perception of physical competence is only one contributor to self-esteem. Positive perceptions of physical competence are goals worth pursuing, due to their potential in promoting lifelong physical activity. Further research is needed to study the effects of exercise on more task-specific areas of physical self-perceptions. These may be more susceptible to change and thus provide suitable goals for pedagogical interventions.

REFERENCES

Lintunen, T., Leskinen, E., Oinonen, M., Salinto, M., & Rahkila, P. (1995). Change, reliability,
and stability in self-perceptions in early adolescence: a four-year follow-up study. **International Journal of Behavioral Development, 18**, 351-364.

Marsh, H. W., & Jackson, S.A. (1986). Multidimensional self-concepts, masculinity, and feminity as a function of women's involvement in athletics. **Sex Roles, 15**, 391-415.

Marsh, H. W. & Peart, N. D. (1988). Competitive and cooperative physical fitness training programs for girls: Effects on physical fitness and multidimensional self-concepts. **Journal of Sport & Exercise Psychology**, **10**, 390-407.

THE RELIABILITY AND VALIDITY OF THE PERCEIVED MOTIVATIONAL CLIMATE IN SPORT QUESTIONNAIRE

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INTRODUCTION

Motivational climate is defined as a situationally-induced psychological environment directing the goals of an action (Ames 1992). If children are guided towards intra-individual reference, this indicates a task-involving climate; where they are guided towards inter-individual reference, e.g. better performances compared to those of others, this refers to an ego-involving climate. Task-involving climate has been found to be associated with adaptive cognitive, affective and behavioral outcomes relevant for motivation. Instead, ego involving climate, especially with athletes having a low perception of physical competence, is associated with less adaptive motivational patterns. In Finland, as in most other European countries the interest in analyzing motivational climate in various sport contexts has arisen largely during this decade. It is of great importance in cross-cultural research that efforts are made to establish equivalence in instruments that are translated from their original language for use in another.

METHOD AND PROCEDURE

The purpose of the present study was to analyze the psychometric properties of the Finnish version of the Perceived Motivational Climate in Sport Questionnaire (PMCSQ; Seifriz, Duda & Chi 1992) for cross-cultural validation and further development of the scale. The participants were 557 Finnish 14-year-old male soccer players. After a discussion by the panel of selected soccer players and coaches it was decided to exclude three ego climate items from the original 40-item scale ("players are taken out of the game for mistakes", "players are encouraged to outplay their own teammates" and "being number one is what counts"). This was decided on the ground that they were not relevant to 14-year-old soccer players in the prevailing Finnish youth sport culture. One item reflecting ego climate and team competence was added ("The most important thing for our coach is that we are better than other teams"), as well as one item reflecting the task climate ("The most important thing for our coach is that we continuously improve in soccer skills"). Thus, the final Finnish version of the PMCSQ consisted of 39 items.

RESULTS

Exploratory factor analysis was first applied in order to evaluate the dimensions of the factor structure. Oblimin-rotated principal axis factorization was carried out in order to analyse the hypothetical two-factor structure of the scale. As expected, a clear two factor solution emerged, reflecting task-involving and ego-involving coaching climates, respectively. This solution explained 29.5 percent of the variance. Confirmatory factor analysis was then conducted to test the construct validity of the PMCSQ. Seven poorest task and ego climate items were dropped out because they had low factor loadings (<0.45) in the exploratory analysis. Thus, fourteen items were accepted for the task climate factor and 11 items for the ego climate factor (Table 1). Four LISREL confirmatory factor models were analyzed: the two-factor model with uncorrelated errors, the two-factor model with correlated errors (11 error covariances estimated), the four-factor model with two specific factors (5 error covariances estimated), and the model with equality constraints for the loading of the task and ego climate factors, respectively (5 error covariances estimated). The best statistical fit

(χ^2=549.55, df=267, p<.0001, χ^2/df=1.82, RMSEA=0.040, RMR=0.056, GFI=0.93, NFI=0.87) was found for the four-factor model with two specific factors.

TABLE 1. Items Included in the Confirmatory Factor Model, Loadings and Item Reliabilities.

Task climate items	loading	rel
2. Players are rewarded when they have worked hard	.56*	.31
6. Players are encouraged to work on their weaknesses	.50*	.25
25. Players often do extra work after practice because they want to improve on their skills	.44*	.19
28. Trying hard is rewarded	.58*	.34
30. The coach makes sure players improve on skills they're not good at	.58*	.33
32. Coach is happy as long as we try hard	.49*	.24
34. The focus is to improve each game	.59*	.34
38. It's important to keep trying even though you make mistakes	.67*	.45
41. Even if we lose, coach feels good about us when we play well	.53*	.28
43. The most important thing for our coach is that we continuously improve in soccer skills	.59*	.35
44. Players work hard because they want to learn new things about soccer	.63*	.39
47. Everyone feels like he has an important role on the team	.51*	.26
49. The coach wants us to try new skills	.62*	.39
51. In our team mistakes are seen as being part of learning	.49*	.24

Ego climate items	loading	rel
5. The only way players get playing time is if they have talent	.49**	.24
8#. Coach gives most of his attention to the "stars"	.55**	.48
12#. The coach favors some players over others	.51**	.43
16. Everyone wants to be the high scorer	.40**	.16
19. It is important to show the coach that you are better than the rest	.47**	.23
21#. Only the top players "get noticed" by the coach	.66*	.62
27##. Doing better than others is important	.55**	.46
35. The only thing that matters is winning	.56**	.32
36. Players are punished when they make a mistake	.56**	.32
39##. Teammates compete against each other for playing time	.50**	.40
53##. Playing better than teammates is important	.58**	.50

standard error .04 (*), .05 (**)
#=specific factor I, ##=specific factor II

In the ego climate factor the errors corresponding to items 8, 12 and 21 correlated with each other as did the errors corresponding to items 27, 39 and 53, respectively. These results were interpreted as demonstrating the existence of two specific factors in these items, namely "unequal recognition" and "intra-team rivalry". Both the task and ego climate factors had distinct loading structures, indicating good construct validities. The correlation between them was -0.31, which was statistically significant (p<.001). In the Table 1 the reliability coefficients (Bollen 1989) for the items are also presented. The estimated variances of the specific factors were statistically significant (p<.001) indicating the existence of these factors.

The Cronbach alpha coefficients of reliability for the direct sums of the task and ego climate items were 0.86 for the task and 0.83 for the ego climate scales.

DISCUSSION AND CONCLUSIONS

Motivational climate in sports in Finland as well as in many other European countries has only recently been studied from the point of view of achievement goal orientation theory. Because of the increased interest in the topic, cross-cultural validation and further development of the Finnish version of the PMCSQ which has been constructed to measure the concept of motivational climate was seen as an important task in order to standardize the scale in Finland. The use of a variety of statistical methods in analyzing the reliability and validity produced a valid picture of the psychometric properties of the scale.

The relation between the task and ego-involving motivational climate scales was found to be bipolar. This finding needs further research, because conceptually there is not a generally accepted view about the relationship between the two dimensions. Confirmatory factor analysis revealed the existence of two first-order factors in the ego-involving climate scale. In the ego climate scale these specific factors may be interpreted as subdimensions of unequal recognition and team rivalry, which support the theoretical conceptualization of Newton and Duda (1993). The presence of subdimensions in the ego climate scales should not be seen as a weakness but rather as indicating the theoretical multidimensional nature of the subscale.

The primary use of statistical methods in decreasing the number of items in order to improve internal consistency may have led to the problem that not all the theoretically meaningful dimensions are taken into account in the final scale. Thus it might be appropriate to expand the scale to incorporate more items so as better to cover the theoretical definitions of motivational climate.

REFERENCES

Ames, C. (1992). Achievement goal, motivational climate, and motivational processes. In G.C. Roberts (Ed.) **Motivation in Sport and Exercise.** Champaign, Illinois: Human Kinetics, 161-176.

Newton, M. & Duda, J.L. (1993). The Perceived Motivational Climate in Sport Questionnaire-2: Construct and predictive validity. **Journal of Educational Psychology, 15** (Suppl.).

Seifriz, J., Duda, J.L. & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. **Journal of Sport and Exercise Psychology, 14**, 375-391.

NAGANO OLYMPIC PROJECT - A 6-YEAR SPORT PSYCHOLOGY INTERVENTION

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KEY WORDS: Sport psychology services, Nordic Combined, Intervention

INTRODUCTION

Sport psychology services, offered by consultants representing various levels of expertise, are widely used in elite sports. The projects are often limited by time and economical resources and the effectiveness of these services is seldom critically analyzed. The reports of the outcomes are usually based on subjective evaluations of the consultants and coaches, rarely on scientifically valid measurements. Therefore, a severe need to develop means to evaluate the effectiveness of sport psychology services from the Quality Management perspective is evident.

This paper presents the framework of the 6-year psychological intervention program of the Finnish National Team in Nordic Combined Sports, which started in 1992, and aimed to help the team to achieve one Olympic medal in Nagano Winter Olympic Games 1998. Three specific features defined the planning of the program. The team started with a new coach who was deeply involved in the project and reflected his positive attitude to the athletes. Because the young team members (mean age 18 years) did not have negative attitudes towards psychological counseling, their level of commitment to the program was high. The material resources were low, which did not allow the consultant intensive direct contacts with athletes. Instead, a continuous and well-designed psychological counseling with the head coach was stressed. A special emphasis was also laid on the micro-environments of the players, including personal coaches and parents.

INTERVENTION PROGRAM

Following main steps were taken in the intervention.

1. Intensive analysis of the athletes' psychological skills and other individual characteristics in relation to the psychological needs of the two sport domains (ski-jump and cross-country skiing). This analysis produced a detailed profile of individual psychological challenges and served as a base-line measurement.

2. Development of self-regulatory skills of the athletes.

2.1 Relaxation and stress-regulation included relaxation training by cassette, anchoring exhaling to the calmness of mind as a means of stress-regulation, group and individual relaxation sessions on training camps, and the teaching of the head coach to use different relaxation methods and to teach these to the athletes.

2.2 Mental training included group and individual mental training sessions, the teaching of the head coach to use different mental training methods in different purposes, and the teaching of self-regulatory skills of the athletes. These were applied in following purposes: Promoting recovery, mental rehearsal (skill strengthening, analyzing and correcting the technique, compensation of physical training), increasing the awareness of optimal individual performance emotions and somatic states, regulation of emotions, increasing concentration (own preparation rituals, excluding external stimuli), stress coping

(preparation and readiness for strange/altered competitive circumstances), desensitization of traumatic experiences (injuries, failures), treatment/elimination of somatic pain/injury, ego strengthening. (Liukkonen 1995.)

3. Prevention of staleness based on daily evaluation of mood states during intensive training periods. Figure 1 shows an example of daily mood disturbances by an athlete who was found to be in staleness state, according to the decreased immunological responses (blood glutamine level) and increased orthostatic heart rate.

4. Individual preparation program for competition based on the analysis of previous successful and non-successful experiences and individual psychological characteristics.

5. Personality analysis and counseling of the head coach, personal coaches, and service staff especially before the Olympic Games. The aim was to provide information about the staff members? individual coping skills and other relevant characteristics, which might have influenced negatively the competitive preparation of the athletes.

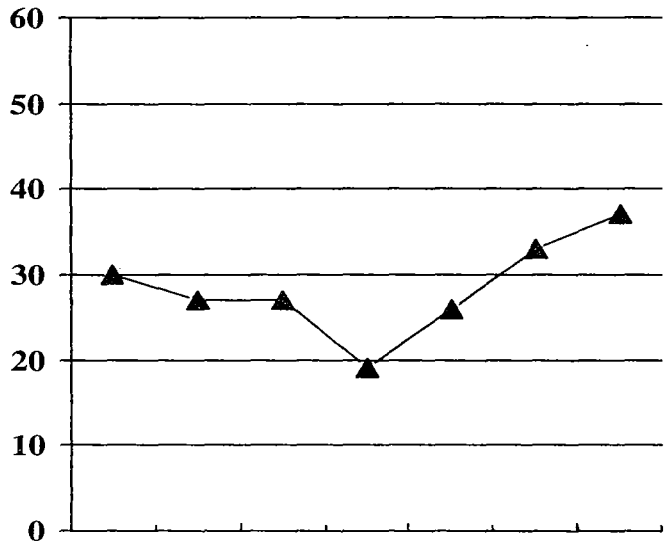

Fig. 1. Changes in daily mood during intensive training camp in an athlete with physiological staleness symptoms (in the end phase of the camp).

EFFECTIVENESS EVALUATION

The evaluation of the intervention was based on following criteria:

1. The athletes' willingness to continue the program was assessed annually when planning the coaching year. The athletes continuously expressed their willingness to continue the psychological intervention.

2. The evaluation by the head coach. According to the coach (Pelkonen 1998), the most valuable outcomes of the intervention were: Increased self-regulation skills of the athletes, favorable development of the team atmosphere, and increased level of psychological know-how of the coach himself.

3. Changes of the psychological skills of the athletes. The analysis of base-line and end measurements showed clear individual improvements in concentration, goal setting, relaxation, coping skills, and communication skills. Figure 2 presents the changes in heart

rates during a 10-minute relaxation test before and after an intensive three month relaxation training period.

4. Competitive outcome was analyzed by the rankings of the National Team in relation to other countries. During 1992/1993 the Finnish National team was ranked eight, and the two best individual rankings were ninth and thirteenth. During 1996/1997 the team rank was third in the world, and the best individual rankings were first and second. Finland won silver medals in individual as well as in the group competition of Nordic Combined in Nagano Games.

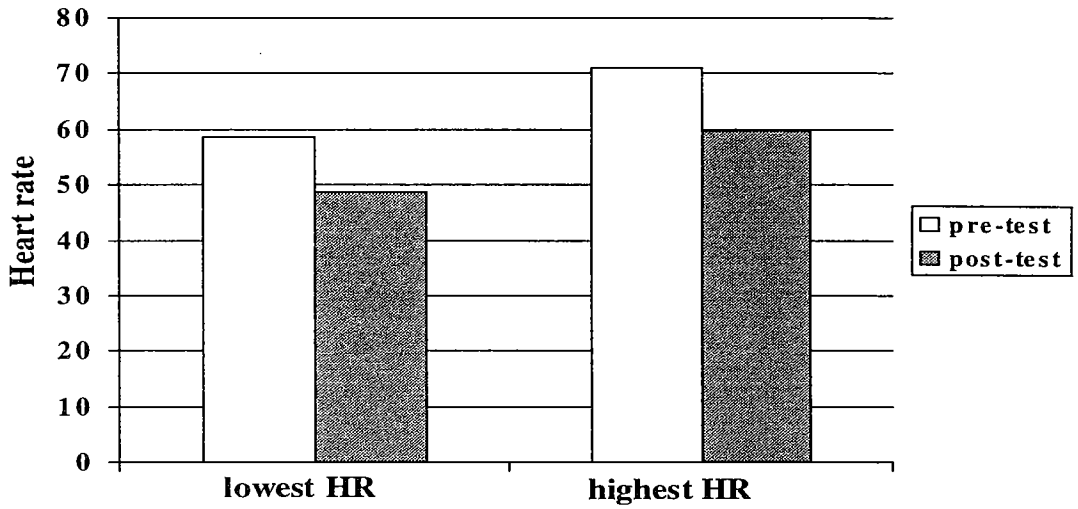

Fig. 2. Minimum and maximum heart rates of the Finnish Nordic Combined National team members in a ten-minute relaxation test before and after the three month relaxation intervention.

CONCLUSIONS AND IMPLICATIONS

In spite of the fact that this psychological intervention was most intensive ever reported in Finland, the lack of resources did not make it possible to cover all dimensions needed for Quality Management. Most important outcome was, according to the expectances of the coach and the athletes, competitive success in Olympic Games and other important International competitions. Because there are many factors which may affect competitive outcome, it is not possible to assess the role of the psychological intervention in the success. However, some subjective and measured positive changes in performance enhancement as well as in psychological well-being outcomes were evident.

REFERENCES

Liukkonen, J. (1995). Regulation of performance emotions in sports. In J. Viitasalo & U. Kujala (Eds.), The Way to Win. Proceedings of the International Congress on Applied Research in Sports, Helsinki, Finland. The Finnish Society for Research in Sport and Physical Education, 317-322.

Pelkonen, J. (1998). Psychological preparation of the Finnish National Team in Nordic Combined towards Nagano Games. Paper presented in the Sport and Computer Science Congress, Jyväskylä, Finland, April 17-19.

Psychological Determinants of Performance Under Frustration.

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(A) KEY WORDS

goal orientation, coping, determination, performance

(B) INTRODUCTION

Research into motivation postulates that goal orientation plays a dominant role in determining both behavioural consequences such as effort, adherence, and consistency, and outcomes such as level of performance (Tenenbaum, 1996). Similarly, task-specific traits (i.e., perceived ability/competence, self-control, self-efficacy/ confidence) and states (i.e., commitment/effort, feedback tolerance, and tolerance of competitive environment) are also important determinants of an individuals performance under varying environmental conditions (see Roberts, 1992). The purpose of the present study is to investigate the interaction of relatively stable psychological traits and states, with varying environmental conditions (i.e., competitive framework; feedback mode) which evoke frustration, and their effect on the performance of a computer simulated running task.

(C) METHOD AND PROCEDURE

Participants in the study were twenty-five (25) female and five (5) male undergraduate university students (age range 18 - 37 yrs., $\underline{M} = 20.83$, $\underline{SD} = 4.41$). The participants were all volunteers, and received course credit for their involvement.

The following questionnaires were administered to all participants: TEOSQ for measuring Ego and Task Orientations (Duda & Nicholls, 1992); the SCS for measuring self-controlling responses (Rosenbaum, 1980); the PSE for measuring Physical Self-Efficacy (Ryckman, Robbins, Thornton & Cantrell, 1982). Task Related Self-Efficacy, and Determination were also measured by specific items pertaining to the task.

The task was carried out on a standard computer and involved participants making a computer simulated runner, complete a race as fast as possible by repeatedly pressing the "Z" key on the computer keyboard. The races were broken into two conditions: self-referenced (competing against a personal standard), and opponent-referenced (competing against a computerised opponent). Each condition contained three sets of thirty races (trials). The sets of trials were differentiated by feedback mode: Positive feedback - the naive participant consistently wins; Negative feedback - the naive participant consistently loses; and Variable feedback - the naive participant wins 50% - loses 50% in random order. For the specific purpose of this study and to enable this differentiation, all feedbacks presented to the participants were false and unrelated to actual performance. Actual race times (milliseconds) were automatically recorded and stored by the computer after each trial.

(D) RESULTS

In order to estimate how much the dispositional and task-specific variables account for a computer simulated running task performance, hierarchical regressions were employed. Goal Orientation (i.e., Ego, Task) was entered first, followed by Coping Strategies (i.e., Perceived Physical Ability, Physical Self-Presentation Confidence, & Self-Control), and Determination (i.e., Effort, Commitment, Efficacy Against an Opponent/Personal Standard, Tolerance of Positive, Variable, and Negative Feedback). The results for competing against an opponent are presented in Table 1. The results for competing against a personal standard are presented in Table 2.

Table 1. Hierarchical Regressions using Goal Orientation, Coping Strategies, and Determination as Predictors of Computerised Running Performance, when Competing Against an Opponent.

		Feedback Mode								
		Positive			Variable			Negative		
Step	Variable	cumR	$cumR^2$	ΔR^2	cumR	$cumR^2$	ΔR^2	cumR	$cumR^2$	ΔR^2
1	Goal Orientation	.51	.26	--	.53	.28	--	.52	.27	--
2	Coping Strategies	.70	.49	.23	.67	.45	.17	.73	.54	.27
3	Determination	.80	.65	.16	.83	.68	.23	.81	.66	.12

Table 2. Hierarchical Regressions using Goal Orientation, Coping Strategies, and Determination as Predictors of Computerised Running Performance, when Competing Against a Personal Standard.

		Feedback Mode								
		Positive			Variable			Negative		
Step	Variable	cumR	$cumR^2$	ΔR^2	cumR	$cumR^2$	ΔR^2	cumR	$cumR^2$	ΔR^2
1	Goal Orientation	.53	.28	--	.49	.24	--	.46	.21	--
2	Coping Strategies	.68	.46	.18	.64	.41	.17	.66	.43	.22
3	Determination	.80	.63	.17	.81	.66	.25	.80	.64	.21

The three clusters accounted for 63% - 68% of the variance in computerised running performance across the three feedback modes and two competitive conditions.

The interaction effect between competitive conditions and feedback modes on computerised running performance is displayed graphically in Figure 1.

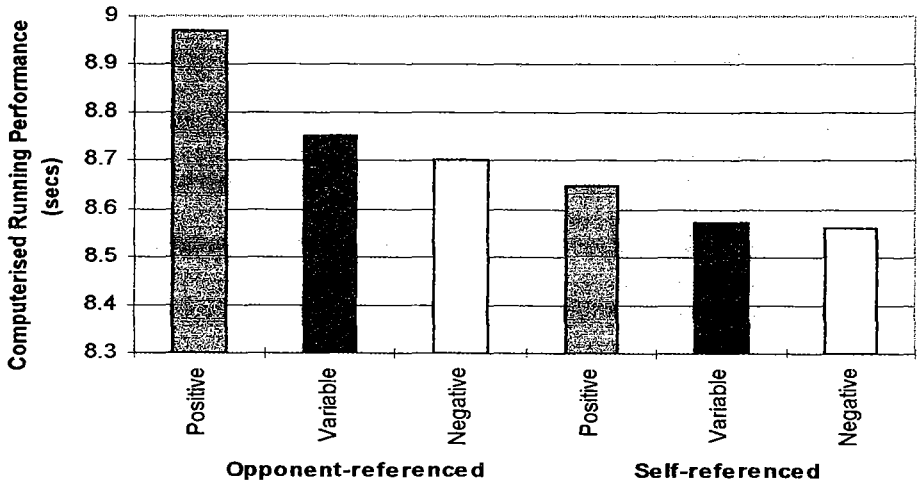

Figure 1. Computerised Running Performance as a function of the interaction between Competitive Condition and Feedback Mode.

Within the opponent-referenced condition an effect size of 0.42 SD was calculated between positive and negative feedback modes, and 0.34 SD between the positive and variable feedback modes, whereas the effect size between variable and negative feedback modes was only 0.08 of a SD. Within the self-referenced condition effect sizes were 0.17 SD between positive and negative feedback, 0.15 SD between positive and variable feedback, and 0.02 SD between variable and negative feedback.

(E) DISCUSSION

In line with previous research findings (i.e., Tenenbaum, 1996), the current study predicted that goal orientation, coping strategies, and determination would play a crucial role in determining the physical and psychological discomfort arising from a physically demanding task. Goal Orientation (task/ego) alone, on average accounted for 25.67% of variance in performance across the environmental conditions. Coping Strategies also added a substantial amount of variance, ranging from 17% - 27% across the conditions, indicating that within competitive activities, self-efficacy is a significant predictor of how well individuals persist in adverse conditions. Finally, Determination was found to add a further 12% - 25% of variance in performance, indicating that within competitive conditions, variables such as effort, commitment, perceived task related ability, and tolerance of feedback modes, appear to combine and effect performance under different conditions. The implications of the present study appear relevant to a diverse array of settings (i.e., sporting, educational, and occupational) considering that increased tolerance of environmental conditions appear to be an important determinant of task adherence, and performance outcome.

(G) REFERENCES

Duda, J. L., & Nicholls, J.G. (1992). Dimensions of achievement motivation in schoolwork and sport. **Journal of Educational Psychology, 84,** 290-299.

Roberts, G. C. (1992). Motivation in sport and exercise: Conceptual constraints and convergence. In G. C. Roberts (Ed.), **Motivation in sport and exercise.** Champaign, IL: Human Kinetics.

Rosenbaum, M. (1980). A schedule for assessing self-control behaviors: Preliminary findings. **Behavior Therapy, 11,** 109-121.

Ryckman, R. M., Robbins, M. A., Thornton, B., & Cantrell, P. (1982). Development and validation of a physical self-efficacy scale. **Journal of Personality and Social Psychology, 42,** 891-900.

Tenenbaum, G. (1996). Theoretical and practical considerations in investigating motivation and discomfort during prolonged exercise. **Journal of Sports Medicine and Physical Fitness, 36,** 145-154.

PECULIARITIES OF SOCIAL BEHAVIOUR BETWEEN BASKETBALL PLAYERS

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Key Words:social behaviour, basketball.

INTRODUCTION

Nobody would deny that organization of sports activity and particularly of its arrangements has an effect upon social behaviour and reactions of sportsmen. Aim of this work is to analyse what reactions of social behaviour are prevalent between sportsmen and particularly basketball players. Earlier a supposition was common that associate reactions provide better interaction between members of team, but Lenk reached a conclusion that "high results may be achieved regardless of internal conflicts, if a distinct adaptation reaction does not exist" (Cratty, 1973). This contradicts common opinion that teams can reach good results only in that case when close, friendly relations exist between their members. Lenk in 1962-64 researched a basketball team and detected a serious inside conflict. He predicted a split of the team into two hostile groups. These data were confirmed not only by hostility between leaders, but also by socio-metrical selections and answers. Inside problems of the team became even more distinct after the game started. However, regardless of inside conflicts and tension between members of team, this team was successfully participating in competition. A conclusion of Lenk was that if inside conflict develops paralelly with improved sports activity, it may help - as we can see - improve some indicators. Research data (also obtained by Lenk, Fidler and his colleagues) were confirmed in a study of Martens (1970). Aim of his research was to find a relation between associate motives and sports results in 144 basketball teams in which participated more than 1200 college students. As other researches he concluded, that teams with members oriented into more friendly relations participated in competition less successfully than teams, in which association needs were moderate or little. However, findings of these studies should be commented with caution. For example, as basic success criteria is taken a well-considered decision, reached by team members and trainer. In other words, some of the teams consider friendly relationships as more important than winning, and then these teams are successful if they set close inter-personal relations after their common efforts and activity. Martens (1970) found that members of teams where friendly relationship needs were at high level were more content than members of those teams where this level was lower, regardless of ratio between won and lost matches. As was said before, interpretation and practical use of these results is difficult because of basic changes in social motives, group relationships and pretence level during sport season. The same happens when attempt is made to analyse practical principles, review literature about motivation of achievements and needs in inter-personal relations between members of sport teams (Johnson, Johnson, 1989). Stronger association between members of team and reached higher results are expressed in better unity of the team. (Pease, Kozub, 1993; Westre, Weiss, 1991).

METHOD AND PROCEDURE

Study was conducted in 3 high schools with participation of 87 students - basketball players and 3 sports schools with participation of 62 pupils. The high school athletes ranged in age

from 18 to 22. The sport school young athletes ranged in age from 15 to 17. The first questionnaire is according American psychologist Thomas (1973). It helps to indicate typical ways of reaction to conflict situations. It is possible to find out whether a sportsman is inclined to compete or co-operate in the team, tries to reach a compromise or avoid conflicts, whether he or she estimates readiness of every member of the team for common sport activity. Questionnaire consists of 30 questions. Every respondent had to circle-mark with pencil the most acceptable sentences, which are calculated and divided into five sections (competition, co-operation, compromise, avoidance and adaptation). Results are compared to find out the most acceptable social behaviour of respondent in complicated situations. Less than 3 points means behaviour reaction "little characteristic", 4 - 7 points "characteristic", and 8 - 12 points "very characteristic".

RESULTS

Thomas' methodics allowed to find out the ways of social behaviour between students and pupils going in for sports. Results of the study are provided in the table 1.

TABLE 1. Distribution of students and pupils by ways of social behaviour.

Ways of social behaviour	Basket-ball players	"Little characteristic"		"Characteristic"		"Very characteristic"	
		Amount	%	Amount	%	Amount	%
Competition	students	16	18	34	39	37	43
	pupils	12	19	27	44	23	37
Co-operation	students	16	18	38	44	33	38
	pupils	18	29	27	44	17	27
Compromise	students	16	18	43	49	28	33
	pupils	23	37	24	39	15	24
Avoidance	students	31	34	32	37	24	27
	pupils	24	39	22	35	16	26
Adaptation	students	11	13	43	49	33	38
	pupils	19	31	26	42	17	27

From Table 1 we can see that competition is characteristic to 39% and very characteristic to 43 of students. Co-operation is characteristic to 44% and very characteristic to 38% of students. Compromise is characteristic to 49% and very characteristic to 33% of students. We notice statistically significantly dominant estimation by students that competition ($\chi^2(2) = 8.99$, $p<0.05$) and co-operation ($\chi^2(2) = 9.27$, $p<0.05$), are "characteristic". Adaptation is characteristic to 49% and very characteristic to 38% of students We notice statistically significantly dominant estimation by students that compromise ($\chi^2(2) = 12.76$, $p<0.01$) and adaptation ($\chi^2(2) = 18.68$, $p<0.001$), are "characteristic". We can conclude that there is an active competition between students, and this livens up their activity and conduct. Students because of their common activity needs are also inclined to share information, perceive and understand other person, help others to realise their scopes, take care of other's businesses. Students also are characteristic by their ability to find and choose the right desicions, make concessions, avoid fights and arguments, which could complicate their relationships in any situation. They are inclined to adapt to the needs of other members and avoid unpleasant

events and situations. Between pupils we could not find any statistically reliable difference according to level of characteristicity of behaviour reactions. Statistically, the difference between students and pupils in accordance with their adaptation and compromise reactions is significant, since $\chi^2(2) = 6.42$ ($p<0.05$) and $\chi^2(2) = 6.56$ ($p<0.05$) i.e. reactions of students dominate.

DISCUSSION AND CONCLUSIONS

A pionieer research of cooperation and competition has been Deutsch (1982), but many others have followed (Axelrod, 1984; Johnson, Maruyama, Johnson, Nelson, Skon, 1981). These terms as used here refer to how individuals perceive their social environment. Thus, individuals may be basically cooperative psychologically and yet engage in contests in which they compete against others. We can conclude that there is a normal competition between pupils striving to their own or team's scopes. Pupils are very inclined into friendly relationships with others, are helping each other realise their needs and scopes, are co-operating. Most pupils are looking for ways out of conflict situations between group members, possibly arising because of inability to choose the right decisions, and the big majority is avoiding unpleasant events and situations. In this study we obtained statistically significant difference between students and pupils in accordance with their adaptation and compromise reactions. Adolescent pupils find more difficult to adapt and seek compromises. The striving for independence is the result of both internal and external forces acting on the adolescent. Achieving independence and attaining a sense of identity interact in a complex manner during the adolescent period (Diamant, 1991). We could not notice any statistically significant difference between students and pupils - basketball players in accordance with their competition, co-operation and avoidance tendencies.

REFERENCES

Axelrod, R. M. (1984) **The evolution of cooperation.** New York: Basic Books.

Cratty, B. J. (1973). **Psychology in contemporary Sport.** New Jersy: Prentice Hall.

Diamant, L. (Ed.).(1991). **Mind-body maturity: psychological approaches to sports, exercise, and fitness.**Washington, DC: Hemisphere.

Deutsch, M. (1982). Interdependence and psychological orientation. In Derlega, V. J., Grzelak, J. (Eds.). **Cooperation and helping behavior.** New York: Academic.

Johnson, D. W., Johnson, R. T. (1989). **Cooperation and competition: Theory and research. Edina,** MN: Interaction Books.

Johnson, D. W., Maruyama, G., Johnson, R. , Nelson, D., Skon, L. (1981). Effects of cooperative, competitive, and individualistic goal structures on achievement: A meta-anlysis. **Psychological Bulettin, 89,** 47-62.

Martens, R. (1970). Influence of Participation and Motivation on Success and Satisfaction in Team Performance. **„Research Quarterly", 4,** 510-518.

Pease, D. G., Kozub, S. (1994). Perceived coaching behahaviors and team cohesion in highschool girls basketball teams. **Journal of Sport & Exercise Psychology: NASPSPA abstracts, 16,** S93.

Westre, K., Weiss, M. (1991) The relationship between perceived coaching behaviors and group cohesion in high school football teams. **The Sport Psychologist, 5,** 41-54.

PSYCHOLOGICAL TREATMENT AND MENTAL TRAINING IN THE REHABILITATION OF SPORT INJURIES

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KEY WORDS

Sport injury; Rehabilitation; Psychological Treatment; Mental Training

INTRODUCTION

In the treatment of sport injuries many things are undertaken at the medical and physiotherapeutical level to optimize rehabilitation. Segesser (1997) defines several points for a successful rehabilitation of sport injuries. He draws a clear line between plans to operate on the patient, the aims of rehabilitation, the primary settings, the treatment team and the methods of treatment. In naming the points he refers to a factor that is decisively influential for the rehabilitation: the patient's motivation. There is not much attention drawn to this point in today's schemes for rehabilitation (Wiese-Bjornstahl, Smith & Lamott, 1995). Either a patient is motivated or he is not. Although one is aware of the importance of the mental state, the following questions remain unanswered: Can the rehabilitation of sport injuries be optimized in taking into account the psychological aspects? How can the psychological aspects in the rehabilitation after sport injuries be integrated in an overall scheme or program of rehabilitation? Is there any use, from athletes' side, for such a scheme?

The aim of this interdisciplinary research project (sport psychology and sport traumatology) is to prove whether and to what extent psychological treatment and mental training show any of such results that can be successfully integrated in the process of rehabilitation. Starting off with the presumption that severe injuries (i.e. ACL-, Achilles tendon- and shoulder injuries) are an event of stress for the athlete, it is tried to apply appropriate mental strategies by means of the specifically developed mental training program called „COMEBACK" (Marcolli, 1997) which have as a result the successful mastering of the injury by the athlete. Considering the stress and coping theories by Lazarus and Folkman (1984) and Folkman, Chesney, McKusick, Ironson, Johnson and Coates (1991) it is presumed that this successful mastering of injuries by the participants of „COMEBACK" (in comparison with a control-group of non-participants) is expressed in the following different dimensions: Coping-strategies, mood state, self-evaluation and evaluation by the physiotherapists of treatment adherence. It is of further interest how the athletes evaluate the whole treatment. Furthermore, it is the intention of the planned study to show, whether the participants of „COMEBACK" look at themselves in a more realistic way than the members of the control-group. This shall be shown by means of medical criterias in the process of rehabilitation.

METHOD AND PROCEDURE

The beginning of this two year-longitudinal study is in May 1999. For this study, only subjects can take part that fulfill certain criterias: amount of time spent with sport is at least 8 hours sports per week; great or very great importance of the sport in life; ACL-, Achilles tendon- or shoulder injury following medical surgery; medical and physiotherapeutical treatment in the Praxisklinik Rennbahn (Muttenz, Switzerland) during the whole rehabilitation. Throughout the rehabilitation, the different dimensions are measured by the means of questionnaires at four different points in time (before rehabilitation, 6 weeks after surgery, 15 weeks after surgery, and about 24 weeks after surgery, right after the „comeback" in competition). The test-group is expected to show significantly more positive results at all dimensions than the control-group. Furthermore, the differences between the two groups are expected to get bigger in the course of time, or to stay at least the same. Within the framework of an overall care-service in the rehabilitation after sport injuries it should be shown that athletes consider psychological care as necessary and useful and that this fact has its effects on the different dimensions. It is the superior aim of this study to help to establish psychological treatment and mental training in the rehabilitation of sport injuries.

REFERENCES

Folkman, S., Chesney, M., McKusick, L., Ironson, G., Johnson, D.S., & Coates, T.J. (1991).Translating coping theory into an intervention. In J. Eckenrode (Ed.), **The social context of coping.** New York: Plenum.

Lazarus, R.S., & Folkman, S. (1984). **Stress, appraisal and coping.** New York: Springer.

Marcolli, C. (1997). **COMEBACK - Mit Mentaler Stärke durch die Sportverletzung.** Unveröffentlichtes mentales Trainingsprogramm. Muttenz: Praxisklinik Rennbahn.

Segesser, B. (1997). **Besonderheiten der Rehabilitation in der Sporttraumatologie.** Unveröffentlichter Vortrag. Muttenz: Praxisklinik Rennbahn.

Wiese-Bjornstahl, D.M., Smith, A.M., & Lamott, E.E., (1995). A model of psychologic response to athletic injury and rehabilitation. **Athletic Training Sports Health Care Perspectives, 1**, 1, 17-30.

OLYMPISM IN ANCIENT GREECE AND NOWADAYS

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KEY WORDS
Olympism, Kalokagathia, dualism, harmony

INTRODUCTION

The article depicts basic conception of Olympic philosophy. Olympic spirit in antiquity is analysed from Platonic point of view. The article discusses two kinds of approach to education of a human being – harmonic and dualistic.

METHOD

Critical analysis of Platonic philosophy, hermeneutic method of understanding by Gadamer.

PHILOSOPHYCAL ANALYSIS

Ancient Greece was in its time the only area opened to the cult of body and sport. While the aim to live for in other ancient nations was preparation for the life after death or hard work to keep alive, the ancient Greeks tried to live their lives fully, striving to develop the human being into its full beauty.

The ideal they seeked to fulfil was Kalokagathia, the harmony of mind and body, which belongs under the concept of Olympism. To approximate to this ideal, they developed two kinds of education - "music" and "gymnastics". "Music" did not mean only learning music, but education in general, "gymnastics" covered the area from the development of human body to the acquisition of good manners and good taste. Both, "music" and "gymnastics", were equally important, both were necessary for a man to become and keep in harmony with himself. It meant to keep oneself at the very point where all the antagonistic forces within him were balanced. Concerning these two parts of education, people often think, and this view was common already in the ancient Greece, that "gymnastics" was to educate the body, and "music" was to educate the mind. This approach shows a dualistic apperception of the human being - it presupposes two separate parts of a human being from which each needs its own education. The resulting human being is then a sum of these two parts. What the quality of this sum will be depends on the quality of its two parts.

But it is possible to see this problem from a different point of view. Already in his time, in 5th century BC., Plato in his dialogue Republic suggests a different approach to the human being which overcomes the dualistic one. He says that both, "music" as well as "gymnastics", can be looked at as taking care of the whole of the human being.

Education in Greece did not divide the mind from the body. Both, "music" and "gymnastics", were taught at the same place (gymnasion), and belonged unseparatedly to each other. The ancient man was educated to be harmonious and those who succeeded in accomplishing their harmony could take part in the Olympic Games. Olympia was not only a place, where sport was performed, it was also an intellectual and artistic center. The aim of the Olympic Games was not only a successful athlete, but a harmonious one. For only a harmonious man could come close to the gods (epifania), whom the Olympic Games were dedicated. The Olympic Games, the most important part of Panhellenic Games, was an event, where one could see the

best youths from the entire Greek world competing for a crown of wild olive. But this all happened within the natural limits. There was no preasure on them to overcome natural human possibilities, for their aim was "arete", i.e. balanced excellence. Trying to gain excessive "arete" would mean overstepping the balance. To prevent this, Greek religion and philosophy cooperated very closely with the world of the sport. Thus Greek athletes competed with their opponents only. They were striving for the victory on the spot, they did not record the achieved results for next competitions, they did not compete with previous results.

On the other hand in the contemporary sport athletes must achieve excellent performances, which are by now at so high level, so that an athlete, if he wants to belong among the best, cannot devote his time to anything else but only to his performance. The aim of the contemporary Olympic Games, and other sport competitions, is often not so much the victory over an opponent, but the victory over previous world record. Every new generation of athletes is driven to be better than the previous one, they must go far behind their natural possibilities. And as it is thought, that the body is educated only by means of physical education, an athlete is often reduced to a mere body, which must be trained as much as possible. And as the target is too high, there can be no time wasted and the training for the most important sport event is devoted to the physical education only. There is no time for the education of the mind. But the fact is, that it is not a mere body, one part of a human being that takes part in a competition, it is the whole human being. This whole human being is a living unity who can be educated by means of the two above mentioned ways of education, which help him to harmonize himself. And if one of them, either "music" or "gymnastics", is omitted, the whole human being is impoverished.

CONCLUSION

The consequence of dualistic conception means one-sided development. So that if one excludes physical activity from his life, it will not be only his body, which will count the cost, but also his mind. And analogically, if the care of one's mind is omitted, it will not be only the mind, which will count the cost, but the body well.

PAST (Ancient Greece)	NOWADAYS
Tendency to develop oneself according to the right measure = Harmonious human being = Balanced performance (performance as a means for arete)	Tendency to exceed limits = One-sided developed human being = Higher performances with no regard to somatomental harmony (performance as an end – negation of arete)

REFERENCES

Eliade, M.: Dějiny náboženského myšlení I. OIKOYMENH, Praha 1995.
Hogenová, A.: Etika a sport. Karolinum, Praha 1997.
Mouratidis, I.: "Culture and the Olympic Spirit in Antiquity", in International Olympic Academy, Report of the Thirty-third Session, IOC, 1994, p.63-71.
Platón: Ústava. OIKOYMENH, Praha 1996.
Zamarovský, V.: Vzkříšení Olympie. Olympia, Praha 1980.

OBLIGATORY EXERCISE QUESTIONNAIRE AND TRAINING PROFILES OF IRONMAN TRIATHLETES FOR 1996 AND 1997: DOES REPEATED PARTICIPATION INCREASE THE INCIDENCE OF BECOMING EXERCISE DEPENDENT?

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KEYWORDS

dependence, Exercise, Triathletes

INTRODUCTION

Any form of behaviour engaged in to excess may be considered to be abnormal. Those who are addicted to exercise will usually derive great benefits from it although some may be affected negatively by such so-called addictive behaviour. De Coverley Veale (1987) regarded a compulsion to exercise as the key underlying mechanism in all forms of exercise dependence. Coen and Ogles (1993) found that obligatory runners both ran more miles and spent more time per week running than non-obligatory runners do. It was noted by Yates, Leehey and Shisslack (1983) that the importance of running for the men in their study revolved around issues of control, identity and self-worth and the intensity of striving towards a desired goal. Little investigation has been made into whether the same models could be applied to triathletes, and Ironman Triathletes in particular.

The purpose of this paper was to investigate the incidence of exercise dependence in Ironman Triathletes and the extent to which it might be measurable as a function of the number of Ironman triathlons completed.

METHOD AND PROCEDURE

Participants were 163 triathletes (1996= 51 male, 7 female; 1997=99 male, 6 female) who competed in the Wolverhampton Longest Day Ironman Triathlon in 1996 and 1997. Demographic and Obligatory Exercise Questionnaire data (OEQ) (Pasman and Thompson, 1988) were collected via mailed packages with pre-paid return envelopes. Of these 163, seven competed in both 1996 and 1997 (4 male, M age=37.5, SD=3.11; 3 female, M age=40, SD=0). Following the completion of the 1997 competition the seven triathletes who had competed in 1996 and 1997 competitions were contacted and asked to verbally respond to 27 questions by recording their answers on the audio-tape supplied. They were also asked to complete the short version of Profile of Mood States (Brunel Scale) (Terry, Keohane and Lane, 1996) and the Eating Attitudes Test (EAT) (Garner et al. 1982). Six participants responded and returned the package.

RESULTS AND DISCUSSSION

Results indicated that there were differences between the participants who competed in 1996 and those who competed in 1997. For the whole sample (n=163) there were significant main effects for miles biked per week ($F_{(2,157)}=3.73$, $p<.05$) and significant differences between the sexes ($F_{(2,157)}=4.933$, $p<.05$) with males cycling more miles than females. There were also significant differences between the 1996 and 1997 participants regarding hours of training per week ($F_{(2,157)}=7.2$, $p<.01$) with 1997 triathletes training two hours less per week than 1996 triathletes. There was no significant difference between the years for OEQ scores. Results do appear to indicate that repeat Ironman Triathletes may not become more exercise dependent (1996 OEQ = 48.33; 1997 OEQ = 46.67). Results from the Brunel Scale indicated that repeat triathlon competitors were below the anticipated norms on subscales in all but two cases. EAT responses showed that none of these participants had a tendency toward an eating disorder.

Qualitative responses indicated that training had become more intense over the past year for two participants due to have obtained a personal coach. The quantity of training had, however, remained the same. Two of the triathletes had been injured for a period of time; frustration related to not being able to train was evident but it was clear that, while there was a certain level of dependence on exercise there was little exhibited obsessive behaviour. Goals and realistic targets regarding upcoming races had been set. Two individuals stated training had taken on a different focus following unexpectedly good results in the previous year; quantity and intensity had both increased. A change in work mode and schedule for one participant had enabled this change to take place while the other triathlete was continuing to work full time.

The fact that four of the participants showed little change in their OEQ scores appeared to indicate that repeat Ironman Triathletes do not become more dependent on exercise the longer they participate in the sport. The two individuals who had increased the quantity and intensity of their training did show an increase in results (from 35 to 40 and 50 to 52) on the OEQ, the latter score indicating a dependence on exercise according to Pasman and Thompson (1988). This increase also supports the work of Pierce, McGowan and Lynn (1993) who found that increase mileage per week resulted in a higher dependence on exercise. Average OEQ scores for all participants was greater (49.31) than that recorded for repeat Ironman Triathletes (45.86), although the number of hours trained per week was greater for the repeat competitors (18.14 hours/week) than the average for all other participants (13.60 hours/week).

CONCLUSIONS

It appears that the profile of repeat Ironman Triathletes fits that of the Cluster 3 group identified in the Adams and Kirkby (1998) paper as indicated by relatively high OEQ scores but no identification with an eating disorder. There seem to be indications that high levels of training for ultra-endurance events are not more likely to result in negative exercise dependence, as illustrated through these repeat Ironman Triathletes. Further research is needed to compare these results with those of other ultra-endurance athletes in order to determine whether the cross training effects of triathlon have a positive impact on ensuring that exercise remains in the positive zone.

References

Adams, J. and Kirkby, R. J. (1998) **Exercise dependence as a primary disorder**. paper submitted to 10th European Congress of Sport Psychology, Prague, July 1999

Coen, S. and Ogles, B. (1993) Psychological characteristics of the obligatory runner: a critical examination of the anorexia analogue hypothesis. **Journal of Sport and Exercise Psychology, 15**, 338-354

De Coverley Veale, D. (1987) Exercise dependence. **British Journal of Addiction , 82**, 735-740

Garner, D.M., Olmstead, M.P. & Polivy, J. (1982) The Eating Attitudes Test: Psychometric features and clinical correlates. **Psychological Medicine, 12**, 671-878

Pasman, L. and Thompson, J. (1988) Body image and eating disturbance in obligatory runners, obligatory weight lifters and sedentary individuals. **International Journal of Eating Disorders,** 7, 759-769

Pierce, E. F., McGowan, R. W. and Lynn, T.D. (1993) Exercise dependence in relation to competitive orientation of runners. **Journal of Sports Medicine and Physical Fitness, 33**, 189-193

Taub, D. and Benson, R. (1992) Weight concerns, weight control techniques, and eating disorders amongst adolescent competitive swimmers: the effect of gender. **Sociology of Sport Journal, 9**, 76-86

Terry, P, Keohane, Lane, A. (1996) A user guide to the Profile of Mood States - Children. (1996. **Journal of Sport Sciences, 14**, 49

Yates, A., Leehey, K., and Shisslak, C. (1983) Running - an analogue of anorexia? **New England Journal of Medicine, 308**, 251-255

CONCENTRATION TIME IN YOUNG AND OLDER ADULTS IN PRECISION SPORT TASKS

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KEY WORDS
Concentration time, motor performance, miniature golf, dart, aging

INTRODUCTION

In a study by Molander & Bäckman (1989) highly skilled young (M=29.5 years) and middle-aged (M=50.0 years) miniature golf players were observed in relaxed training and high-arousal competition rounds. Motor performance, as measured by number of shots, subjective ratings of anxiety and heart rate were registered. Results showed a similar increase of arousal from training to competition for both age groups, However, the older group deteriorated in motor performance from training to competition, whereas the younger group played equally well on both occasions. In the same study concentration times were measured, the definition of the the concentration phase being the interval from the point in time where the lowering of the club in front of the ball is finished until the point in time at which the backswing is started. Concentration times measured for first shots showed a tendency toward shorter times for older than younger players and an interaction between age and training/competitive activity such that the older players showed longer concentration time in training than in competition, whereas the younger players showed shorter concentration time in training than in competition.

The results of the Molander & Bäckman (1989) study were replicated and extended in a subsequent study (Molander & Bäckman, 1994), where once again highly skilled miniature golfers were studied, this time with participants covering a broader age-range than in the Molander & Bäckman (1989) study. Adolescents (M=17.7 years), young adults (M=28.8 years), middle-aged adults (M=52.3 years), and older adults (M=63.5 years) were observed during training and competition. Results showed worse motor performance in competition as compared to training on the part of the two older groups, whereas the two younger groups improved from training to competition. Concentration time decreased from training to competiton for the two older groups and increased from training to competition for the two young groups. Overall the two oldest groups of players showed shorter concentration time than the two youngest groups.

These results are interesting for, at least, three reasons: First, in miniature golf sport concentration time seems to mirror motor performance. A similar pattern of the age by activity interaction is found for both the motor performance measure and the concentration time measure. Secondly, variation in concentration time may indicate variation among individuals and age groups in the cognitive processing occurring during the concentration interval. Thirdly, and contrary to what is often stated in the aging literature (e.g., Salthouse, Kausler, & Saults, 1988), these findings suggest that older people are not always slower and more careful than younger people.

The purpose of the present study was to try to find out more about the observed age differences with respect to concentration time. In the two studies by Molander & Bäckman (1989, 1994) the difference in concentration time between the young and older players may, for example, be due to a difference in the ability to monitor the time needed to prepare the shot (cf. Murphy, Schmitt, Caruso, & Sanders, 1987), or it may be that the older players simply cannot put in as much mental effort in concentration as the young players. Another possibility is that young and older players as belonging to different age cohorts have adopted different preshot routines in learning the game, or that age groups simply differ in skill and experience in how to perform the

motor task at hand. The plausability of some of these explanations is examined in the three studies of miniature golf performance and dart performance reported here.

METHOD AND PROCEDURE

Study 1

One hundred and three skilled miniature golfers were observed during a regional competitive event that was arranged in Umeå, Sweden. The age of the players varied from 11 to 75 years. Two of the 18 "holes" (all holes were of the textile surface type) were selected for study. By means of video recording and stop watches the concentration time during the first and subsequent shots on the two holes were measured for each player during four rounds. The two holes are constructed in such a way that if there is a miss on the first shot, the second shot will require careful judgement about how to proceed to reach the green.

Study 2

Twenty-four highly skilled miniature golf players ranging in age from 12 to 70 years participated in a laboratory experiment, where the task was to putt the ball as close as possible to an obstacle. This task was performed on an ordinary hole of the textile surface type. The task was considered a realistic one, as shots with balanced force are often needed in miniature golf. There were four different distances of the obstacle, and players used either their normal concentration time or a concentration time that was 50% longer than the normal concentration time. The motor performance measure was the distance (in centimeters) of the ball from the obstacle .

Study 3

In a second laboratory experiment 48 persons, aged 22 to 80 years, participated in a dart task. None of the subjects had any experience of competitive darts. The task was simply to perform as well as possible in a modified darts game under two conditions: normal and blindfolded. Concentration time was measured by means of video recording and a stop watch. Motor performance was measured by the scores obtained in each throw.

RESULTS AND CONCLUSIONS

The first study replicated the Molander & Bäckman (1989, 1994) studies in that middle-aged and older players showed shorter concentration time than young adult players and adolescent players (i.e., 15-19 years of age). However, players in the age range of 11 to 14 years showed even shorter concentration time than the oldest players. Overall, the relation between age and concentration time could best be characterized as an inverted U-function.

The results of the second study showed that the older players spent less time concentrating before putting than the younger players. When 50% longer concentration time was allowed motor performance became worse in both groups, although the younger group did not deteriorate as much as the older group.

In the third study results showed that young adults use more time in concentrating before executing the throws than middle-aged persons. However, the oldest group in the study (i.e., persons being 70 years of age or older) showed the longest concentration time. In the blindfold condition concentration time decreased in all age groups, but the relative difference among groups remained mainly the same.

In conclusion, these results suggest that within the context of precision sports there are indeed exceptions to the rule that older adults are slower than young adults. Although the present series of studies was not designed to examine all plausible hypotheses that might be suggested on the issue it does indicate that neither the hypothesis of different cohorts or the hypothesis of different ability to monitor the time needed for concentration is tenable.

REFERENCES

Molander, B., & Bäckman, L. (1989). Age differences in heart rate patterns during concentration in a precision sport: Implications for attentional functioning. **Journal of Gerontology: Psychological Sciences, 44**, P80-P87.

Molander, B., & Bäckman, L. (1994). Attention and performance in miniature golf across the life span. **Journal of Gerontology: Psychological Sciences, 49**, P35-P41.

Murphy, M. D., Schmitt,F. A., Caruso, M. J., & Sanders, R. E. (1987). Metamemory in older adults: The role of monitoring in serial recall. **Psychology and Aging, 2**, 331-339.

Salthouse, T. A., Kausler, D. H., & Saults, J. S. (1988). Investigation of student status, background variables, and feasibility of standard tasks in cognitive aging research. **Psychology and Aging, 3**, 29-37.

THE ANTAGONISTIC EFFECT OF DISSOCIATIVE STATES ON FIGURE SKATING PERFORMANCE

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KEY WORDS

Figure skating, sudden performance collapse, dissociative states.

INTRODUCTION

The present study was carried out 1) to investigate whether there exists empirical evidence for the antagonistic effect of dissociative states on figure skating performance, and if so ... 2) "What's the prevalence of these dissociative states among figure skaters?"
In the model for describing and explaining figure skating performance (see Moormann, 1994/95) it is supposed that dissociative states may have both a facilitating (creating flow) and a debilitating effect (blackout) on performance. Then a sudden performance collapse in fact is nothing more than a blackout, due to a negative dissociative state. The core of the model involves the classical concepts of cognition (the planning agent), emotion (colouring agent), and conation (the driving force).
The results are not only interesting from a theoretical point of view but they may have practical implications as well, particularly in regard to mental training programs for competitive figure skaters.

METHOD AND PROCEDURE

A sport specific questionnaire (The Cognemocona-32 / 4-point rating scale) based on the above model, was administered to 36 Dutch figure skaters (29 female and 7 male skaters from 15 to 54 years of age) who acted as volunteers. The respondents either still were or had been active in serious competition on national and international level. Performance was measured subjectively by asking the respondent to indicate on a 10 cm line if they tended to perform under (a mark more to the left) or above (a mark more to the right) their usual practice level when performing under stress (in serious competition).

RESULTS

Percentages for the various altered states of consciousness were computed (based on the respondents who reported "often' and 'nearly always' on the item in question). A mild hypnoid trance, which contributes to the expressive qualities of the skater (item 04: acting ability), was reported most frequently (44%). In 28% of the cases a de realisation was reported (item 13: skating as if in a dream), in 22% of the cases a de personalisation/de realisation (item 04: skating as a robot), and in 11% of the cases another de personalisation leading to a sudden collapse of performance (de realisation: blackout) was reported.

A Principal Component Analysis with Varimax Rotation was carried out on the Cognemocona-32 items and the performance rating item. A four factor solution was decided for (see Table 1), which explained 62.1% of the variance. Factor I with an Eigenvalue of 10.6 accounted for 34% of the total variance. The Eigenvalues and percentages of explained variances for Factor II, III and IV were 4.6 and 14.4%, 2.4 and 7.4%, and 2.0 and 6.4% respectively.
Factor I was called 'Panic Attack' (regarding content it belongs to the Anxiety Disorder Syndromes - see Bootzin, Ross Acocella, & Alloy, 1993), Factor II 'Flexibility", Factor III "Facilitating Anxiety", and Factor IV "Superstitious Behaviour". The last three factors were named after the item with the highest loading within this particular factor.

TABLE 1: PCA on the items of the COGNEMOCONA-32

FACTOR 1: Panic attack / **FACTOR 3: Facilitating anxiety**	**FACTOR 2: Flexibility** / **FACTOR 4: Superstitious behaviour**			
	I	**II**	**III**	**IV**
30. Somatic stress responses: 'jelly' knees	.92			
09. Emotional liability: worrying 1	.80			
26. Somatic stress responses: heavy legs	.80			
17. De personalisation / de realisation: blackout	.72			
24. Reduced feeling: no good ice contact	.68	-.40		
29. Somatic stress responses: irregular breathing	.60	-.54		
14. Debilitating anxiety: choking	.57			
25. Neurotic coping: negative self-talk 2	.57			
28. Emotional liability: worrying 2	.55	-.43		.43
27. Somatic stress responses: too tense, no flow	.54	-.44		
22. Neurotic coping: negative self-talk 1	.53	-.48		
04. De personalisation / de realisation: robot	.52		.41	
18. Somatic stress responses: lump in throat	.49	-.56		
23. Somatic stress responses: energy floats away	.49	-.53		
12. Creating flow: no nerves, absorbed by the act of skating	-.40		.42	-.53
20. Problems falling asleep	.40	-.62		
10. Flexibility: ability to improvise as coping		.82		
31. Fighter: perseverance as coping		.76		
03. Skating is my life		.67		
05. Positive self-talk as coping 1		.66		
19. Mild hypnoid trance: acting ability		.58	.43	
32. Distractibility: attention to task-irrelevant cues		.51		
15. Facilitating anxiety: to surpass oneself under stress			.82	
07. Facilitating anxiety & sheer willpower as coping			.78	
06. Hot tempered			.66	
16. Achievement motive: ambitious		.44	.64	
13. De realisation: skating as if in a dream			.61	
11. Internal locus of control			.55	
21. Positive self-talk as coping 2		.47	.50	
02. Superstitious behaviour				.76
01. Intrinsic motivation & high achievement motivation				.69
08. Not emotional: nerves of steel		.41		-.56
Skating performance	-.43	.30	.65	-.24

DISCUSSION AND CONCLUSIONS

Empirical evidence (see Table 1) for both the facilitating (Factor II and III) and debilitating effect (Factor I) of dissociative states on figure skating performance in relation to cognition, emotion and conation could be demonstrated. In the model of figure skating performance (Moormann, 1994) the role of emotions is considered to be twofold:

1. It is the colouring agent as it concerns the acting or the interpretation of the program-music in a dramatic sense. It is suggested that by means of self-hypnosis or auto-suggestion the actor/skater can come into a trance-like state, which enables him/her to identify with a certain character he/she wants to portray on the ice (item 19). In this sense acting involves a dissociative state, an alteration in the perception of the self, a feeling of detachment from and being an outside observer (item 4) of one's mental processes and body (According to Thomas Salvini a good actor lives, cries, laughs on the stage, but never stops watching his tears and his laughter - see Moore, 1963).

2. Emotions, in particular debilitating anxiety (item 14) and worrying (item 9 and 28) are likely to interfere with cognitive processes, and are known to hamper attentional processes, which usually leads to a deterioration of skating performance. This could be called stage-fright, a condition preceded or accompanied by a diversity of somatic stress responses (item 30, 26, 29, 27, 18, and 23). A gradual performance decline so often seen in figure skating competitions generally is the result of this kind of anxiety pattern. However the opposite, a sudden collapse of performance, a complete breakdown of performance or blackout, can be observed as well (item 17), in most cases after an unexpected event which leads to a panic reaction (Factor I).
Janet (1911) and Freud and Breuer (1893) already pointed out that intense emotions affect voluntary control and often lead to a splitting or dissociation of consciousness. Hence, on the one hand trance-like dissociative states found in acting appear to occur (in 44% of the cases) which are supposed to enrich figure skating performance, while on the other hand more disruptive dissociative states seem to occur which have a debilitating effect as they lead to a total breakdown of figure skating performance (in 11% of the cases).
The fear of losing control seems to block the ability to enter a mild hypnoid trance. The emotional unstable skater is too tense to enjoy or to become absorbed by the act of skating. He/she cannot create a sense of flow (item 12), and therefore the performance is lacking expression and charisma. Individuals who are not afraid of their emotions and who are convinced that they are capable of controlling them (facilitating anxiety) see a stress situation as a challenge to surpass oneself (item 15). Having control allows them to experience a sense of flow (item 12) and enables them to enter a mild hypnoid trance (item 19).

Self-talk is a cognitive activity which is assumed to affect performance as well. Reframing is used in mental training programs to transform negative self-talk into positive self-talk. The results from Table 1 confirm the hypothesis that negative self-talk (item 22 and 25) has a debilitating effect on performance (Factor I), while positive self-talk (item 5 and 21) has a facilitating effect (Factor II and III) on performance.

The driving force behind performance concerns conation (motivation). In those cases where there is a combination of high achievement motivation, facilitating anxiety, and positive self-talk skating performance will be good (Factor III). However, a high achievement motive, even if it is intrinsic, is not always a guarantee for a good outcome. Ambitious skaters who are nervous (item 8) and who seek comfort in superstitious behaviour (item 2) are likely to fail under stress (Factor IV).

The results indicate that there is a lot of individual variability regarding stress responses in competition. With a sport specific instrument like the Cognemocona-32 such individual stress responses can be assessed. In our opinion assessment is highly important for taylor-made individual mental training programs. Progressive relaxation for instance is widely used to help athletes learn to regulate their anxiety levels. However this technique can be harmful as well. Anxious athletes who suffer from panic attacks (high scores on Factor I) better refrain from such techniques, as panic attacks are easily provoked instead of reduced by progressive relaxation (see Bootzin, Ross Acocella, & Alloy, 1993). Hence, good intervention is dependent upon proper diagnosis.

REFERENCES

Bootzin, R.R., Ross Acocella, J., & Alloy, L.B. (1993). *Abnormal Psychology: Current perspectives* (6th Ed.). New York: McGraw-Hill.

Janet, P. (1911). *L'état mental des hystériques* (The mental state of hystericals). Paris: Félix Alcan.

Freud, S. & Breuer, J. (1893). On the physical mechanism of hysterical phenomena. In Freud, S., *Collected papers, Vol. 1.* London: International Psychoanalytic Press (1924).

Moore, S. (1963). *The Stanislavski Method. The professional training of an actor* (22nd ed.). New York: Compass Books, The Viking Press.

Moormann, P.P. (1994). *Figure skating performance.* Dissertation. Leiden University, The Netherlands.

Moormann, P.P. (1995). Dissociative states as an explanation for a sudden collapse of figure skating performance . In R. Vanfraechem-Raway & Y. Vanden Auweele (Eds.). *Proceedings of the IXth European Congress on Sport Psychology, Part 1*, (pp. 175-183), July 4-9, Brussels.

STRESS MANAGEMENT AND CENTRAL AND PERIPHERAL VISUAL ATTENTION IN EXERTING AND STRESSFUL CONDITIONS

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(A) KEY WORDS

Autogenic training, central visual attention, exertion, peripheral visual attention.

(B) INTRODUCTION

Bhum and Morris (see this volume) showed that central and peripheral visual attention were disrupted by physical exertion and stress combined with physical exertion. It was also shown that stress level and peripheral angle interacted, such that proportionally greater disruption resulted as stress increased and angle widened together. One aim of the present study was to replicate those findings. One way that the effect of exertion combined with stress could be moderated is by stress reduction. The second aim was to test the proposition that stress management can moderate the negative effects of exertion and stress on visual attention, by teaching participants autogenic training.

(C) METHOD AND PROCEDURE

Participants were 24 physical education students (12 female, 12 male), aged 19 to 25, with no defects of vision or motor coordination, who underwent standard consent procedures. The visual attention task and the exertion and stress conditions were as in the paper previously reported, with the following alterations. White noise was replaced by crowd noise at 83-95 dB, as the psychological stressor, crowd noise being more ecologically valid. The noise only condition was excluded, as the baseline (B), physical exertion (P), and physical exertion plus crowd noise (PN) conditions provided sufficient variation. A measure of state anxiety, the well-validated and widely used A-State Form of the State-Trait Anxiety Inventory (Spielberger et al., 1970), was administered at pre- and post-test, as a manipulation check for the effect of the intervention. Detection errors and response times in both central and peripheral visual attention were measured as in the previous study.

The intervention, Autogenic Training (AT), followed a six stage format involving heaviness of the limbs, warmth of the limbs, calm heart, relaxed breathing, warm solar plexus, and cool forehead. This was presented on audio tape. Participants were instructed to practice daily at a quiet place and at a time that suited them. They completed daily logs and these were checked each week of the AT program. Participants in a no-contact control group (C) were not contacted at all during the period between pre-test and post-test. This control condition was acceptable, because the study was not attempting to establish whether AT is an effective technique. Rather, the aim was to determine whether a reduction in stress would be associated with moderation of the effects on attention.

Following consent procedures and completion of the STAI A-State scale, participants underwent the Physical Working Capacity (PWC_{170}) test. Then they practiced under all three experimental conditions for five minutes. Following familiarisation with the equipment, especially the modes

of response, participants responded to central and peripheral lights under the three conditions in a pre-test. The order of presentation of conditions was balanced across participants. Participants were then assigned at random to the Autogenic Training (AT) treatment or the No-contact control condition for eight weeks, with 12 participants in each condition. The post-test followed the same procedure as the pre-test and was preceded by administration of the STAI A-State scale. Each participant was assigned to a different order to the pre-test, to minimise practice effects.

(D) RESULTS

Detection errors for the central task at pre-test were significantly greater for the P and PN conditions than for the B condition, $F(2, 69)=7.32$, $p<.001$. Detection errors for the peripheral task were significantly greater for the P and PN conditions than for the B condition, $F(2, 46)=148.6$, $p<.001$. Also, the 91-100 degree angle produced significantly greater error than the lesser angle ranges, $F(2, 46)=25.06$, $p<.001$. Angle interacted with stress condition, such that the loss in efficiency increased proportionately more as angle and stress increased, $F(4, 92)=5.82$, $p<.001$. Effect sizes were large to very large.

Response time showed a similar pattern at pre-test, with response times for the central task significantly longer for PN than N and for N than B, $F(2, 69)=25.51$, $p<.001$. For the peripheral task, response time was significantly longer for the P and PN conditions than for the B condition, $F(2, 46)=148.94$, $p<.001$, while for angles response time was longer for wider angle ranges, $F(2, 46)=85.90$, $p<.001$. Again, efficiency of response declined significantly more as angles increased for the P and PN conditions, $F(4, 92)=133.26$, $p<.001$ and effect sizes were large to very large.

The AT group showed a significantly greater reduction in STAI A-State scores ($M=-3.58$, $SD=5.03$) than the C group ($M=.50$, $SD=3.52$), in a gain score ANOVA analysis, $F(1, 22)=5.29$, $p<.03$. Thus, the experimental manipulation was effective.

Gain score analyses were also employed to test all changes from pre-test to post-test, based on the argument by Huck and McLean (1975) that ANOVA underestimates effects in 2x2 pre-test to post-test analyses, because the ANOVA model assumes that the treatment is active at all stages. For detection errors, no significant results occurred for gain scores, either for central or peripheral attention, because errors were so few that there was a floor effect.

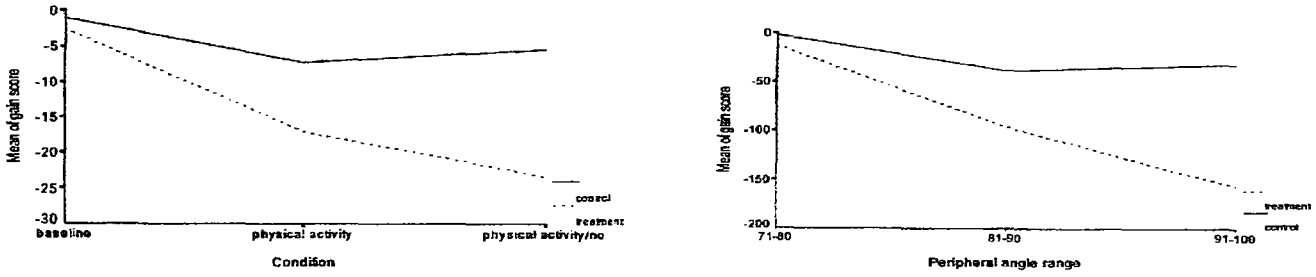

Figure 1. Gain scores for (a) stress conditions and central response times and (b) angle ranges and peripheral response times.

Response time for the central task, as displayed in Figure 1(a), showed significant main effects for treatment, $F(1, 22)=6.57$, $p<.01$, and stress condition, $F(2, 44)=9.08$, $p<.001$, and a significant interaction between treatment and stress condition, $F(2, 44)=3.30$, $p<.04$, all reflecting large effect sizes. Post hoc analysis indicated that all these effects resulted from the significantly larger negative gains, that is bigger reductions in response time, for the AT group in P and PN conditions compared with AT baseline and all three stress conditions for the control group (C). For the peripheral task, as displayed in Figure 1(b), the treatment, $F(1, 22)=6.87$, $p<.01$, and angle, $F(2, 44)=8.61$, $p<.001$, main effects were significant, but the stress condition effect was not, $F(2, 44)=0.01$, $p>.9$. Only one interaction was significant, that between treatment and angle, $F(2, 44)=3.59$, $p<.03$. Post hoc analysis revealed that, for the 91-100 degree angle, there were significantly larger negative gain scores, that is bigger reductions in response time, for the AT group than the control group.

DISCUSSION

The pre-test results revealed that physical exertion and a combination of physical exertion and psychological stress were associated with increases in errors and in response time, replicating the earlier findings. The evidence is mounting that high levels of exertion/stress disrupt the efficiency of visual attention, both centrally and in the periphery. Analysis of pre- to post-test gain scores indicated that state anxiety declined for the AT stress management group only. Thus, the stress management program was effective. There were no significant effects for central or peripheral errors, which were so low at pre-test that a floor effect was observed. Central response time was reduced only for the AT group and for the exertion and exertion/stress conditions, indicating that exertion and stress negatively affect central visual attention and that stress management can moderate these effects. Similar effects occurred for peripheral visual attention, particularly at wide angles and, once again, autogenic training, moderated the negative effect in the periphery. The application of stress management techniques was shown to moderate the effects of exertion/stress on visual attention. This suggests that training in, and application of, stress management can support performance in competitive sport, by enhancing visual attention under moderate levels of exertion and stress. Further research is needed to replicate and extend the present findings.

REFERENCES

Huck, S. W., & McLean, R. A. (1977). Using a repeated measures ANOVA to analyze the data from a pretest-posttest design: A potentially confusing task. **Psychological Bulletin, 82,** 511-518.

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. L. (1970). **Manual for the State-Trait Anxiety Inventory.** Palo Alto, CA: Consulting Psychologists.

HEALTH, SPORT AND BODY CONCEPTS OF ADOLESCENTS IN CENTRAL AND EASTERN EUROPE

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Keywords: sport, health, body concept, adolescents, central Europe, Eastern Europe

1. Introduction

The here presented study is part of an extensive cross-cultural research project analyzing sport activities, health status and health related behavior of different populations in Germany, the Czech Republic and Russia (see Mrazek/Fialová/Bykhovskaya 1999). Sport activities and health related behavior are assumed to be expressions of more general structures concerning cultural values and norms regulating the use of the own body, i.e. parts of specific somatic cultures. Therefore in this study the sport and health related attitudes and values, i.e. the body concepts, are of special interest.

Many studies show that the basics of the individual sport activity and the health related behavior are set up in early childhood. At the age of 15-16 generally structures have been developed which are effective for the further life (HURRELMANN 1994). This is also valid for the development of body concepts (MRAZEK 1987).

In the present time the future of Europe is characterized by processes of rapprochement, cooperation and integration. It becomes more and more important to know each other and to understand each other, individuals as well as societies. The political and economical transformation processes, more dramatic in the Eastern part of Europe than in the Western part, mean changes in cultural dimensions and social structures too. So we have to understand what we can learn from each other, what we should take on and what not, because there are similar developments as well as specific differences in all of our countries. On that basis it is necessary to develop plans for a common future.

2. Method and procedure

A questionnaire was developed including subscales concerning fitness and sport activity, health status and health behavior, risk behavior and nutrition, physical appearance and the self. For all body related areas there were questions concerning behavior as well as subjective concepts. Pupils of 10^{th} and 11^{th} grades were asked to complete the questionnaire, about 400 persons in each country, summed up 1.200 pupils. The surveys were not representative for the whole countries, they were done in the areas of Cologne (Germany), Prague (Czech Republic) and Moscow (Russia).

In the following part some selected results will be presented concerning the health status, health behavior and health related body concepts as well as the correlation between health and sport activity (see also the report of Fialová/Mrazek/Bykhovskaya in this volume).

3. Selected results

3.1. Health status

We asked the pupils for some objective data concerning their health, the number of days they were ill during the last year, the number of days they had to be in bed because of their illness and the number of operations they had. Of course these data are not absolutely objective because the answers are influenced by subjective processes of the memory, but nevertheless they reflect the more objective aspects of health.

Results show that German pupils give the lowest number of days of being ill (Ge 11.8, Cz 21.3, Ru 16.1) and being ill in bed (Ge 3.9, Cz 11.1, Ru 10.1), but the highest number of operations (Ge 1.1, Cz 0.5, Ru 0.4). On the contrary the Czech pupils give the highest number of days of being ill and being ill in bed, but a lower number of operations, not significantly differing from the Russian pupils. The Russian pupils' answers lie between the German and Czech results.

3.2. Health related body concepts

Pupils were asked for different aspects of their health concept, the evaluation of their health, the awareness of their health and the health related locus of control. All items had to be rated on a five-point scale from 1='do not agree' to 5='I fully agree'.

Results show that the German pupils evaluate their health status better than the other groups do. Rating the item ‚compared with most people I'm rather healthy' the national average means are: Ge 3.7, Cz 3.5, Ru 3.6. They also are more aware of their health, but not significantly more than the others (Ge 3.5, Cz 3.4, Ru 3.4). As for the belief that one's health is influenced mainly by chance (external locus of control) the Russian pupils agree more than the others (Ge 1.9, Cz 1.9, Ru 2.4). The Czech pupils show no special profile in this point.

3.3. Physical activity and sport

Physical activity is a very effective way for reducing risk factors of chronic diseases. In adolescence it has the special advantage that most boys and girls like doing sports and being physically active. Therefore pupils were asked for their sport activities and also if they were doing sports for their health.

Results show that a high percentage of the pupils is actually doing sports (Ge 82.4%, Cz 87.5%, Ru 60.6%), but in Moscow significantly less than in the other places. Most of the inactive persons were active some years ago, only few pupils never did sports (Ge 3.4%, Cz 5.8%, Ru 11.8%). Further results show that from a list of ten given health related behaviors doing sports is the most important one for the pupils (see 3.4.).

3.4. Health related behavior

A list of ten items was given to the pupils, containing various health related behaviors. The pupils were asked how often they were doing those, possible answers varying between 1='never' and 5=very often'.

Results show that the pupils agree in a general trend to do the following things for their health: most often physical activity/sport (Ge 3.9, Cz 3.8, Ru 3.5), to be in fresh air (Ge 3.6,

Cz 3.6, Ru 3.6), healthy nutrition (Ge 3.2, Cz 3.0, Ru 3.4), no smoking/reducing smoking (Ge 3.3, Cz 3.4, Ru 2.7) and no alcohol/reducing drinking (Ge 2.9, Cz 3.1, Ru 2.9). Seldom they visit physicians (Ge 2.1, Cz 2.1, Ru 1.9) and use medicines (Ge 1.7, Cz 1.8, Ru 1.9).

Looking for specific national behavior profiles it can be seen that the Russian pupils show the most different profile. They care for healthy nutrition more than the others and do more seldom: physical activity/sport, visiting physicans, no smoking and taking care for a regular structure of the day. The Czech pupils care about a regular structure of the day more often than the others and about healthy nutrition or weight control more seldom. The German pupils have no specific profile except for they try to reduce stress more often than the others.

4. Discussion and conclusions

The objective health data show a trend that German pupils are healthier than the others. This is in accordance with public statistics, but in contrary to those the Czech pupils are more often ill than the Russians.It is difficult to interpret this phenomenon because we know that being ill may be influenced not only by physical conditions, but also by psychological and social determinants. Cultural differences concerning the social value of health and illness may be important too. And the highest number of operations in the German sample, which is otherwise the healthiest, indicates that the term ‚operation' may be interpreted in different ways. The data concerning the health concepts show that the evaluation of the own health is correlated with the given number of days of being ill. But they also show that for Russian pupils health is more influenced by chance than for the others. This result is very important because health education and most ways to improve the health related behavior can be successful only if you believe in internal control, i.e. that you can influence your health by your behavior. The results concerning physical activity and sport are in concordance with the health status for the German and Russian pupils, but very contradictory for the Czech. The Czech pupils care for their health, are physically very active but nevertheless they are – or at least feel – very often ill.

As a general result it can be concluded that the mutual influences between health status, health related behavior, physical activity and body concepts are very complex and show similarities as well as differences between the three analyzed cultures. Systematic research in health and physical activity must take into account behavioral data as well as concept data.

5. References

Hurrelmann, K. (1994). **Sozialisation und Gesundheit**. Weinheim: Juventa.

Mrazek, J. (1987). Struktur und Entwicklung des Körperkonzepts im Jugendalter. **Zeitschrift für Entwicklungspsychologie und Pädagog. Psychologie**, 19, 1-13.

Mrazek, J./Fialová, L./Bykhovskaya, I. (1999). Sport, health and body concepts in Central and Eastern Europe. **Journal of Comparative Physical Education and Sport** (1999, in press).

THE EFFECTS OF A COGNITIVE BEHAVIOURAL INTERVENTION ON ACTIVE COMMUTING BEHAVIOUR: 3 MONTH RESULTS.

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KEY WORDS

Active Commuting, Stage of Exercise Behaviour Change, Processes of Change, Self Efficacy, Cognitive Behavioural Intervention, Physical Activity

INTRODUCTION

In terms of coronary heart disease, inactivity is now accepted as being a risk factor roughly equivalent to hypertension, hypercholesterolaemia and smoking (Pate, *et al.*, 1995). Recent recommendations, indicated that sedentary individuals should attempt to increase their activity levels by accumulating 30 minutes of moderate activity on most days of the week (Pate, *et al.*, 1995, Health Education Board for Scotland 1995). One of the most obvious ways to increase individuals' daily activity is to encourage active modes of commuting (Vuori *et al.*, 1994). A recent postal survey (Crawford, 1996), of two Glasgow workforces showed that 26% of respondents who lived less that two miles from work used their car regularly for commuting. Furthermore, using a stage of behaviour change model, (Prochaska and DiClemente 1986) the survey showed that 18% of men and 15% of women identified themselves as 'contemplating' (thinking about walking or cycling to work in the next 6 months) or 'preparing' (doing some active commuting but not on a regular basis) to actively commute to work. Other studies have demonstrated that tailoring behavioural interventions at these groups can significantly increase physical activity (Loughlan and Mutrie 1997, Cardinal and Sachs 1995). However, cognitive behavioural interventions, which can encourage the public to make more use of the pedestrian and cycling routes and commuting options currently available, have not been tested in a randomised controlled trial. The aim of this project was to assess whether or not a cognitive behavioural intervention, delivered via written interactive materials, could increase active commuting behaviour (walking and cycling) in a workplace setting. Additional objectives were to assess self efficacy for active commuting and to determine what processes of behaviour change are used in increasing active commuting.

METHOD AND PROCEDURE

The study took the form of a randomised control trial which began in March 1998. Subjects were employees of a large Scottish university, two hospital trusts and a district health board who responded to a screening questionnaire on how to increase active commuting to and from work. As screening questionnaires were returned those who were in the contemplation and preparation stage of active commuting behaviour change were recruited to the project and sent a baseline questionnaire. The baseline questionnaire measured exercise stage of change, stage of change for active commuting, self efficacy for active commuting and processes of behaviour change (adapted from Marcus *et al.*, 1994) and a 7 day recall of physical activity (Lowther and Mutrie 1996). Upon receipt of the baseline questionnaire, subjects were stratified for distance travelled to work and randomly assigned to experimental and control groups by computer

generated random numbers. Subjects in the experimental group received the cognitive behavioural intervention. The intervention consisted of a carefully designed and pre-tested cognitive behavioural programme in the form of written and visual interactive materials. It contained a variety of validated behavioural change techniques such as a decision balance sheet, goal setting procedures and activity diaries. Control subjects were told they would receive the materials in six months time. Follow-up questionnaires were sent in June 1998, three months after baseline to both groups. Further follow-up questionnaire will be sent at 6 months, 9 months and 12 months. Only results reflecting the changes between baseline and 3 month will be presented here

RESULTS

Completed baseline questionnaires were received from 295 subjects (experimental group, n=145,control group, n=150) 63% were female and 27% were male, the mean age was 38 years ranging from 19 to 69 years. Two hundred and thirty seven questionnaires were returned at the 3 month follow-up stage in July 1998, which represented an 80% response rate.

A Chi squared test showed that more of the experimental group than the control group moved to a higher stage of active commuting stage of change at 3 months. The proportional net gain (the numbers progressing to a higher stage of change minus the numbers regressing to a lower stage of change) was 21% in favour of the experimental group. Table 1 shows this pattern of change.

TABLE 1 Changes in Active Commuting Stage of Change from Baseline to 3 Months

	Control (n=117)	Experimental (n=120)	All
Regressed to lower stage of change	23	19	42
No Change	60	45	105
Progressed to higher stage of change	34	56	90
Chi-Square = 7.86, DF = 2, P- Value = .02			

Analysis of the 7 day recall results provides further support for effectiveness of the intervention. Two sample t-tests, conducted on the change in activity levels from baseline to 3 months, showed significant differences in total physical activity time ($p<.01$), leisure time physical activity ($p<.001$) and walking approaching significance ($p = .06$) in favour of the experimental group. The results of the 7 day recall responses are shown in Table 2.

TABLE 2 Mean Change from Baseline to 3 Months in 7 Day Recall of Physical Activity (mins./wk)

Physical Activity	Experimental	Control	significance of two sample t-test
Total	+156.1	-74.7	.00
Leisure	+124	-65.7	.001
Walk	+34.8	-9.2	.06
Cycle	+7.6	-0.2	.14

A two sample t-test demonstrated no significant differences between the experimental and control groups in changes from baseline and 3 month for self efficacy scores.

Of the ten processes of change only self liberation was used more by the experimental group ($p<.001$) at 3 months. For most of the other processes the sample mean change for the experimental group is higher than that for the control group and correspondingly the 95% confidence intervals favour the intervention.

DISCUSSION AND CONCLUSIONS

These preliminary results show that our intervention has been effective in promoting more active commuting behaviour. It is interesting that the intervention seems to be having an effect on leisure activity levels as well, perhaps by making people more aware of the benefits of physical activity, and this is an added advantage. This makes a written set of materials, aimed at increasing active commuting, a relatively cheap but yet effective way of increasing physical activity levels in the short term. The fact that changes in self-efficacy (SE) scores and most of the processes of change were not different between the experimental and control groups is perhaps not surprising since Prochaska and Diclemente (1992) showed that SE scores can sometimes be higher for those who have not yet experienced the behaviour and that processes of change are more difficult to analyse in the earlier stages of change. Further analysis of the results will happen at 6 month, 9 month and 12 to assess the longitudinal effect of the intervention.

REFERENCES

Cardinal and Sachs, ML. (1995). Prospective analysis of stage of exercise movement following mail delivered, self instruction exercise packages. **The American Journal of Health Promotion**; 6, 430 -433.

Crawford, FA. (1996). Travel to work: A postal survey to investigate employee attitudes towards walking or cycling during the journey to work. **Master of Public Health Dissertation.** University of Glasgow.

Health Education Board for Scotland (1995). The promotion of physical activity in Scotland; a policy statement.

Loughlan C, Mutrie N. (1997). An evaluation of the effectiveness of three interventions in promoting physical activity in a sedentary population. **Health Education Journal**; 56, 154 - 165.

Lowther MP, Mutrie N. (1996). Reliability and concurrent validity of the Scottish physical activity questionnaire. **British Association of Sports Medicine Annual Congress Report.**

Marcus BH, Eaton CA, Rossi JS, Harlow LL. (1994). Self efficacy, decision making and stages of change: an integrative model of physical exercise. **Journal of Applied Sports Psychology**; 24 (6), 489-508.

Pate RR, Pratt M, Blair SN, Haskell WL, Macera CA, Bouchard C, et al. (1995). Physical activity and public health: a recommendation from the Centres for Disease Control and Prevention and the American College of Sports Medicine. **JAMA**, 273 (5), 402-407.

Prochaska J, DiClemente C. (1986). Towards a comprehensive model of change. In: Miller WR, Heather N, (eds) **Treating addictive behaviour: processes of change**. New York: Plenum

Prochaska J, DiClemente C. (1992). Stages of change in the modification of problem behaviours. In Hersen M, Eisler RM, Miller., **Progress in behaviour modification.** Sycamore IL: Leisure Press.

Vuori IM, Pekka O, Paronen O. (1994). Physically active commuting to work - testing its potential for exercise promotion. **Medicine and Science in Sports and Exercise**, 26(7), 844-850.

THERAPEUTIC EFFECTS OF EXERCISE ON THE SELF: IMPLICATIONS FOR RESEARCH AND PRACTICE

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KEY WORDS: Coronary rehabilitation, depression, diabetes, exercise, self-perceptions, therapy.

In a recent review of the therapeutic role of exercise (Mutrie, 1997) it was concluded that those who are either rehabilitating from a medical condition (such as a myocardial infarction), coping with a chronic illness (such as diabetes), dealing with reproductive events (such as pregnancy or the menopause) or dealing with the processes of ageing, might benefit psychologically from involvement in regular programmes of exercise. However, it was also clear from the review that in most of these areas further well-controlled research is required. The best evidence lies in the area of exercise and the treatment of clinical depression in which both meta-analytic and narrative reviews have favourable conclusions. In most other areas, the evidence is based on cross-sectional, descriptive and sometimes only anecdotal reports.

The role of exercise in positively enhancing self-perceptions and self-esteem seems particularly important to investigate since all of these conditions provide a challenge to the patient's sense of his or her physical ability and thus may impact on global self-esteem . Previous research in this area has been dominated by measuring physiological changes and medical outcomes. Physiological change must be explored to show the efficacy of exercise as a treatment , but it is likely to be changes in patients' physical self-perceptions, and the sense of being in control of their bodies which contribute to psychological benefit and ultimately to the quality of life.

The process by which exercise may enhance self-perceptions is also important when considering the topic of adherence to exercise which has been prescribed for therapeutic reasons. In some areas (e.g cardiac rehabilitation) a great deal is known about adherence to exercise, but in other areas (e.g diabetes) there is no knowledge base. It may well be that adherence strategies will differ depending on each population in question and the perception they might have about exercise. Rejeski and Hobson (1994) point out that for some people, even if they know exercise has potential health benefits for them, the demands of becoming involved are perceived as stressful. Rejeski and Hobson (1994) suggest a team approach by medical staff to minimise the stress and to maximise adherence to exercise programmes in rehabilitation, with emphasis placed on providing individual exercise counselling at the outset of the programme. There is a need to train the people most likely to deal with patients (nurses, midwifes, physiotherapists and doctors) in exercise counselling and in the benefits of exercise so that the patient does not hear confused messages from the 'team'. There is also a case for each team having a trained exercise specialist who can prescribe exercise, perform physiological testing if required and provide exercise counselling. This could be an area of potential employment for sport and exercise scientists. The research community must provide more conclusive evidence about the benefits of exercise for these populations and the cost-effectiveness of exercise to make the case for the use of exercise specialists in therapeutic settings.

REFERENCES

Mutrie, N. (1997). The therapeutic effects of exercise on the self. In K. R. Fox (Ed.) **The physical self: From motivation to well-being**. (pp. chapter 11, 506-560). Champaign, IL: Human Kinetics.

Rejeski, W.J., & Hobson, M. (1994). A framework for enhancing exercise motivation in rehabilitative medicine. In H.A. Quinney, L. Gauvin, & A.E.T. Wall (Eds.). **Toward active living**. (pp. 107-114). Champaign, IL: Human Kinetics

PSYCHOLOGICAL SUPPORT AS A TREND OF SPORT PSYCHOLOGY

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Progress in sport and psychology of the last decades led to serious changes in these fields of human activity and science. Contemporary sport is a developed infrastructure, an integral part of world culture, a source of material and spiritual values, producing and reproducing psychological sphere of a man - personalities of an athlete and a coach. This fact proves an important role of a psychologist in sport and physical culture. The goal of the research is to analyse and to generalise the work of a psychologist in sport and physical culture.

The following methods were used: logical&historical analysis of publications concerning problems of the content of psychological training (in order to determine traditions and tendances of the development); content-analysis of special sections of didactic materials used in high school institutes; questioning of coaches (in order to reveal the applied tasks of psychology in sport training); analysis of the results of coach's work connected with the use of psychological knowledge; analysis of the experience of psychological support of national teams.

Results. 1. For many years medical & biological and pedagogical sciences dominated among all sport sciences providing training process. At the same time results of psychological researches did not find application in sport, sport psychology was considered as an auxiliary science and was not widely used in the system of sport training of an athlete. 2. The main task of sport psychologist was to prepare an athlete to competitions. 3. To solve this task only methods of psychological diagnostics were used. 4. Work of a psychologist with a single athlete and his diagnostic examination were considered a sufficient input of sport psychology in the training process, that limited the development of both fundamental theoretical researches and practical sport psychology.

However, at present there are developed new branches of practical psychology with their particular notions and technologies, that take into account important tasks and problems of other sciences (medicine, management, etc.). In sport there is accumulated a lot of experimental data, that require theoretical analysis and examination; at the same time psychological science has many practical applications, that can be realized in the sphere of sport. So it is necessary to extend the limits of practical activity of a psychologist in sport, where preparation to competitions is only one task among many other important problems. New tasks and

methods of sport psychology determine the new content of practical psychology: psychological support of the sphere of sport and a necessity of special training of a psychologist for work in sport and physical culture. Thus, we suggest to discuss a model of the activity of a sport psychologist, and subjects, tasks and content of training such specialist within the limits of the program of Institutes of Physical Education.

VALUE ORIENTATIONS IN THE SYSTEM OF SPORT TRAINING

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INTRODUCTION

Formation of value orientations of personality is connected with values of society. In present day economic and social state of Russian society former values lose their exactness in social consciousness. Acute contradictions in the sphere of value orientations take place, the ideals are destroyed, value images become indefinite. At the same time value orientations of personality are greatly affected by new economic relations in the sphere of services, including physical culture, leading type of a specialist's activity and the system of values in physical education.

This study is aimed at revealing value orientations of young people studying in higher institutions of physical education. Revealing value orientations of the students of Institutes of Physical Education gives opportunity to speak about the successfulness of studies, about effectiveness of training in general. Formation of motivational foundations for future professional activity at the pre-institute stage is a precondition for success in getting a profession. At that stage the stable interests which determine involvement into the process of training are being formed. Change in value orientations, life plans, motives and sets take place in physical education of personality. In the process of professionalization, accumulation of knowledge and pedagogical experience the value hierarchy is constantly changing.

HYPOTHESIS.

Supposed that there is a definite structure of value orientations of the students of Institutes of Physical Education, in which replacement of dominating values is taking place during the studies and professionalization. The purpose of our study is destinguishing the content and structure of value orientations of specialists in the sphere of physical culture.

METHOD AND PROCEDURE

Methods of research: psychological techniques by Rokitch, Klimov, Woodcock, Potiomkina, oriented to value orientations research, mathematical statistics for data processing.
Subjects of the investigation are the second year students of Russian Academy of Physical Education (RAPE). There were 163 respondents, 65 girls and 98 young men.

RESULTS

The following systems of value orientations were revealed as a result of this research. According to Rokitch technique students of all specializations, except "sport management", preferred "health" as the top value. "Love" was on the second place,

though students in rowing, cycling amd motor-sport put it on the third place, while the second was given to "social activity". The third were "friends", "freedom", "well-off life". "Cognition", "good friends" dominated among students engaged in "sport management". "Health" was on the third place. Among instrumental values "independence" was scored highly. Students engaged in "theory of mass forms of fitness" preferred "vigour" (sense of humour). Then "good breeding" and "education" follow, the third was "accuracy".

Klimov's technique gave a clear picture in distinguishing professional orientation of second year students. Orientation to work with people is quite obvious in all students of the Academy. Future sport producers and students engaged in acrobatics imagine their future activity as work both with people and with artistic images, which reflects their creative approach.

We also used a method suggested by Woodcock, an American psychologist, which was modified according to the subjects. The range of values was like this: personal aims, constant personal growth, rational personal values. At the same time such value as "ability to solve problems" was ignored by the students of all groups. "Ability to control oneself" was appreciated only by those students who have specialization in combats (Karate, taekando, ikido).

By means of Potiomkina's method it was revealed that the main value for the second - year students was "freedom", and "orientation to the process " was on the second place. Students from "Theory of Mass Forms of Fitness Activity" and "Swimming" Departments preferred orientation to egoism, and orientation to result was on the third place.

CONCLUSION

Based on the value orientation research the following conclusions were made:

1. The results confirmed correctness of the chosen techniques, but as four methods take a lot of time, the problem of an integrated method was put forward.
2. Data on hierarchy of individual and group value orientations, their structure and content of different specializations were obtained.
3. It is possible to conclude that formation of value orientations is not controlled and data of previous works are not used at the present stage. Probably that is why value orientations of modern youth are so vague.

In our opinion it is advisable to organize studies for students with deviations in value orientations adopted in the sphere of physical culture and sport.

THE ROLE OF CONCEPTIONS OF ABILITY AND IMPLICIT THEORIES OF ABILITY ON PERCEIVED COMPETENCE AND SELF - ESTEEM FORMATION IN SPORT AND PHYSICAL ACTIVITY

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KEY WORDS: Perceived ability, conceptions of ability, sport, physical activity, self-esteem

INTRODUCTION

Theory and research models that are capable of generating hypotheses concerning mechanisms and processes of change in sense of physical self have been called for (Fox, 1997). In this paper the impact of different conceptions and theories of ability on generating enhanced perceived competence and self-esteem in achievement related physical activity contexts is discussed.

PERCEIVED PHYSICAL COMPETENCE AND SELF-SCHEMA

One important source of peoples' sense of self expressed as their overall or domain specific self-esteem has been found to stem from evaluations based on competence (Ebbeck & Stuart, 1993; Fox, 1997). In self-esteem arising from competence, people derive self-pride from fullfilling their standards of merit in valued domains. When they meet or surpass valued standards they experience self-satisfaction, but when they fail to measure up to their standards of merit they are displeased with themselves. Perceived competence refers both to peoples' sense of *what they can do* and *how good they are* at different tasks as well as a self-schema for their ability (Markus, Cross, & Wurf, 1990). Self-schemas are defined as the generalizations about the self in a particular domain including also one's beliefs about what is possible in a domain in the future ("Ability is increasable and I can become able if I practice"). Thus, possible selves, the future-oriented components of self-schemas allow one to simulate being competent in a particular domain, and serve to organize and energize one's actions.

ACHIEVEMENT GOALS, THEORIES OF ABILITY AND THE SELF

When involved in sport and physical activity, individuals may appraise situations and construe ability in radically different ways, so that functionally they are working at different tasks. Several motivation theorists suggest that dependent on one's achievement goal (task/mastery or performance/ego) individuals will construe ability and define success differently by being prone to using different conceptions of ability and preferred competence information sources in line with their achievement goals. Empirical evidence supports these assumptions (Xiang & Lee, 1998). Embedded in a task-oriented achievement goal is the use of a self-referenced, undifferentiated and more controllable conception of ability in which learning, trying, effort and improvement equals ability. By contrast ego/performance oriented achievement goals, which include a division between performance/ego-approach and self-enhancing and performance/ego-avoidance and self-defeating (Skaalvik, 1997) are akin to the belief that demonstrating ability entails performing better than others or that avoiding demonstrating lack of ability entails avoiding being the poorest.

Frequently, these variations in task construal are linked to different abstract beliefs about the nature of ability (Ommundsen, 1998a). An entity theory of ability involves the general belief that ability is a fixed and stable attribute based on giftedness that is not subject to change. An incremental theory involves the belief that ability is increasable through effort. Compared to individuals who hold an incremental theory, entity theorists are more likely to approach

achievement situations holding an ego/performance oriented achievement goal in which they aim at documenting their innate ability. "Incrementals", by contrast, will be more concerned with developing their ability, will be less concerned with documenting it or looking smart or trying to avoid not looking smart. Compared to people who hold an incremental theory of ability and a learning goal, people who hold an entity theory and a performance goal have been found to be less in control of their mastery, are more likely to attribute failure to lack of ability, reduce their effort and are less ready to adjust their performance standards even in situations in which they perceive tasks to be extremely difficult. Moreover, they are more likely to make low ability inferences even after a single achievement setback and to perform poorly in challenging achievement situations. Recent evidence further suggest that it is primarily the avoidance dimension of a performance/ego goal (i.e. when students worry about looking stupid) that may induce a sense of low competence and low self-esteem in students in PE and other achievement settings (Skaalvik, 1997; Ommundsen, 1998b).

This would imply that entity theorists and those holding a performance goal, and in particular those who are performance avoidance goal would have more difficulty with developing and sustaining their perceived competence. Why so? First, the use of a fixed theory of ability and less controllable, other-referenced criteria of mastery make them more likely to believe that either they have the ability or they have not (Dweck, 1991; Ommundsen, 1998a). Second, not believing in the utility of effort make sustained effort and skill development less likely, thus reinforcing an inefficacious self-schema. In contrast, when people are task oriented and hold an incremental theory of ability, their perceived competence and self-schema are likely to benefit (Markus, Cross & Wurf, 1990).

Based on hierarchical models of the self (Fox, 1997), it seems reasonable to argue that enhanced physical- and general self-esteem also would seem more difficult to attain when holding a fixed theory of ability as well as an ego-oriented achievement goal. In support of this, Treasure and Biddle (1995) found among elementary school children that the effect of ego orientation on physical and general self-esteem was mediated by perceived ability, whereas task orientation directly predicted physical and general self-esteem. As Markus, Cross and Wurf (1990) have stated: "Improvement and fundamental self-change are more possible for people with an incremental theory of their abilities. They should have a plethora of well-developed, future possible selves to guide their efforts. But people who subscribe to an entity theory are limited to displaying who and what they already are; they are present- rather then future-oriented, and fail to develop and strive for achievable possible selves" (p.216). Dweck (1990) further maintains: "It is interesting to think of the different theories as different "self-concepts" and of their allied goals as ways of building and maintaining self-esteem within those self-conceptions. That is an entity theory is one way of conceptualizing the self - namely as consisting of static traits that can be measured. The incremental theory, on the other hand, depicts the self as a more dynamic system that can be developed" (p.208).

CONCEPTIONS OF ABILITY AND CONTINGENT VERSUS TRUE SELF-ESTEEM

In terms of self-determination theory, contingent self-esteem refers to feelings about oneself that result from social comparison and that are dependent upon matching some standards of interpersonal excellence or expectations (Deci & Ryan, 1995). Within this theoretical perspective, competence that is less self-determined, (i.e. a result of extrinsic, uncontrolled forces) may lead to contingent self-esteem. "... To the extent that one has to live up to externally imposed criteria to feel worthy, one is likely to esteem oneself in accord with how

one measures up relative to others" (p.32). The notion of an ego oriented achievement goal in which one engages in sport and physical activity as a means to an end (i.e. surpass others) parallells the notion of ego involvement within self-determination theory in which it is suggested that ego involvement exist whenever a person perceives her/his sense of self-esteem to be tied to his/her performance. Thus, even if high perceived ability may nurture self-esteem among those with a fixed conception of ability and/or a high ego-oriented achievement goal, their self-esteem may be contingent and less sustainable, always requiring that they continue to surpass other peoples' performances. Those holding an entity theory of ability and ego/performance goals may therefore also experience more self-esteem fluctuations.

PRACTICAL IMPLICATIONS

- Present activities that are individually challenging, emphasize the need for effort
- Emphasize that failure is part of learning
- Base feedback on progress and effort
- Help children set attainable subgoals for themselves in order to facilitate
- Give unconditional social support to all children

REFERENCES

Deci, E. & Ryan, R.M. (1985). **Intrinsic motivation and self-determination in human behavior**. NY: Plenum.

Ebbeck, V., & Stuart, M.E. (1993). Who determines what's important? Perceptions of competence and importance as predictors of self-esteem in youth football players. **Pediatric Exercise Science, 5**, 253-262.

Fox, K.R. (1997). The physical self and processes in self-esteem developement. In: K. Fox (Ed.), **The physical self. From motivation to well-being**, (pp.111-139). Champaign, IL: Human Kinetics.

Markus, H., Cross, S., & Wurf, E. (1990). The role of the self-system in competence. In R.J. Sternberg & J. Kolligan, Jr. (Eds.), **Competence considered** (pp.205-225). New Haven, CT: Yale University.

Ommundsen,Y. (1998a). Pupils affective responses in PE: The influence of implicit theories of the nature of ability. In: **Proceedings from the 2nd international congress on sport psychology**, Trikala, Greece, 13-15 nov. 1998 pp. 137-141.

Ommundsen,Y. (1998b). Avoid and -approach dimensions of ego-involvement in PE: relations to pupils' perceived competence (unpublished raw data).

Skaalvik, E. (1997). Self-enhancing and self-defeating ego orientation: relations with task avoidance orientation, achievement, self-perceptions and anxiety. **Journal of Educational Psychology, 89**, 71-81.

Treasure, D. & Biddle.S.J.H. (1997). Antecedents of physical self-worth and global self-esteem: Influence of achievement goal orientations and perceived ability. **Journal of Sport & Exercise Psychology**, 19, (supplement), 114.

Xiang & Lee, A. (1998). The development of self-perceptions of ability and achievement goals and their relations in physical education. **Research Quarterly for Exercise and Sport, 69**, 231-241.

THE NORWEGIAN " GET FIT FOR THE OLYMPICS" PHYSICAL ACTIVITY CAMPAIGN: A PROSPECTIVE EVALUATION

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INTRODUCTION

The use of campaigns has become increasingly popular as a strategy for delivering preventive health messages. Few, however, have reported data on outcome effectiveness. A further limit of previous campaign evaluation research has also been the lack of prospective designs, allowing researchers to trace the same people over time, before and after campaign exposure (Redman et. al., 1990).

The main aim of this presentation is to present some results from the evaluation of the "Get fit for the Olympics", a nationwide physical activity campaign launced in Norway in 1990 and which was run for four years. Measures of effects include: 1. Campaign awareness, exposure and beliefs concerning the campaign. 2. Campaign awareness, exposure and beliefs concerning the campaign in relation to socio-demographic characteristics. 3. Change in self-reported physical activity from baseline to follow-up. 4. Relationships between changes in exercise behavior and campaign awareness, exposure and beliefs concerning the campaign.

METHOD AND PROCEDURE

Subjects: The original baseline sample (1990) comprised a representative sample of 2819 subjects from the general adult population, whereas. 52% of these subjects responded to a follow-up survey in 1994.

Measures: The questions analyzed in this presentation covered the following topics: *Campaign awareness ,exposure* and *beliefs. Behavioral beliefs concerning exercise. Social modeling of exercise behavior. Physical activity variables. Socio-demographic variables*

RESULTS

Campaign awareness, exposure and perceived personal impact of the campaign: Whereas campaign awareness and exposure was qiute widespread, about 20% reported participation in one or several of the camapign's local physical activity events. Quite many held the opinion that personal awareness on the health benefits of exercise had increased, and that they had been inspired by the campaign to take up new ways of exercising. 25% reported that the campaign had provided them with new strategies concerning how to get started with exercise. Nearly 50% reported to have learned from the campaign that exercise beneficial for health don't have to be physically streneous. Socio-demographic subgroups differences regarding awareness, exposure and participation rates in campaign events were generally small.

Changes in physical activity from 1990 to 1994: A significant increase in self-reported physical activity was found, in particular among those with a lower educational background (10% increase versus 3%, $p<.001$). For the total sample the exercise frequency per week increase with a mean value of 1,99 in 1990 to a mean value of 2,30 in 1994. This analysis is adjusted for change of age from 1990 to 1994.

Relationship between degree of change in physical activity from 1990 to 1994 and total campaign exposure: A subgroup of physically inactive individuals in 1990 (N= 393), was divided into four subgroups, based on difference in levels of their reported physical activity in 1994. One-way analysis of variance with analysis of contrasting subgroup differences showed

that among those who had increased their activity most from 1990 to 1994 (group 4), compared to those with no reported change in activity (group 1), in group 1 there was significantly ($p<.05$) greater self-reported exposure to the campaign as well as more positive beliefs concerning the personal utility value of the campaign.

Change in physical activity from 1990 to 1994: Campaign influence. A difference score was computed, based on the four groups of activity in 1990 and 1994 mentioned previously. This variable was used together with campaign exposure, attitudes towards physical activity in 1990, change in attitude towards physical activity from 1990 to 1994, social models for physical activity 1990 as well as change in social models from 1990 to 1994 in a multiple regression analysis. Such an analysis allows to estimate the genuin contribution of exposure to change in activity, controlling for the effect of the other variables, which previously also have been found to be important reinforcers of physical activity (e.g. Treiber et.al., 199). The result of this analysis is shown in Table 1.

Table 1: Standardized betaweights from a multiple regression analysis of demographic, attitude, social models and exposure measures on the increase in physical activity from 1990 til 1994.

Independent variables	betaweights	R^2	Change of R^2 for single step
Phys.activity 1990	-.65	.35	.0000
Education	.09	.36	.0000
Exposure	.07	.37	.0000
Change in atti.90-94	-.11	.37	.0044
Attitude 1990	-.11	.38	.0000
Change in social models 1990-1994	.10	.38	.005
Social models 1990	.10	.39	.0002

The analysis shows that, controlling for physical activity in 1990, the rest of the predictors accounts for another 4% of variance in increased activity. The contribution of each of the predictors are, however, rather modest. Nevertheless, it should be noted that total exposure to the campaign remains a significant genuin predictor of increase in physical activity, when controlling for the other ones.

DISCUSSION AND CONCLUSIONS

Public awareness of the campaign was found to be quite strong. The fact that equally strong campaign exposure and participation was found across different socio-demographic subgroups, should be noted, in that mass-media based health communication tends to result in a selective exposure and interest in the general population (Eagly & Chaiken, 1993). The emphasis put on the use of local media together with other promotional stategies in the local communities may have facilitated the diffusion of the campaign message, and contributed to participation more equally across different socio-demographic subgroups

A significant increase in physical activity was found, both "work-related" and leisure time activity. One main focus of the campaign was to give people access to the new message based on epidemiological research that even small amounts of low intensive physical activity is beneficial for health (Haskell et al., 1985). About 50 % of the respondents in the present study agreed that the campaign had contributed to a greater awareness that exercise beneficial for health don't have to be physically streneous. According to social learning theory this may contribute to raise levels of exercise self-efficacy among groups of relatively inactive people and help them change their behavior (Maibach et.al, 1991).

The exposure to the campaign was found to be highest among those who increased their physical activity most from 1990 to 1994. Despite the strength of using a prospective design, it is still quasi-experimental given that the desired national dissemmination precluded use of a comparison region. The possibility that the campaign appealed most to those who, due to external reasons changed their exercise habits in a positive direction between and 1994, cannot be ruled out (Eiser & Gentle, 1989).

The variance accounted for by the exposure variables in physical activity was not impressive. The difference score, however, may have been unreliable because any lack of precision in the 1990 measures of physical activity is accumulated as long as they are combined with similar data four years later. By correcting for attenuation, it might well be that the relationships still may be of substantial interest. The potential effect of the campaign on the increase found in peoples' physical activity may have resulted from the use of supportive activities in the communities to support and reinforce mass-media messages as well as an emphasis on orchestrating points of community intervention (Preston et.al., 1988). A supportive role is important to maintain the climate initiated by a mass-media campaign (Redman et. al., 1990), and may have led to increased interpersonal communication, a change in attitudes as well as higher support for physical activity.

It is important to point out that behavioral outcomes should not be regarded as the only criteria of success in mass-comunication campaigns promoting physical activity. The change of health-related behavior is a process in which changes in the actual behavior itself is an end product of a number of less visible intermediate stege based changes in the individuals' cognitions as well as in the climate of opinion regarding physical activity (Ommundsen & Aarø, 1995). A stable and long-lasting increase in physical activity in the general population can only be achieved when being active has become a social norm (Aarø, 1991). The present campaign may have been one factor contributing in this long term process, and its potential influence should be evaluated with this perspective in mind as well. If not, it's total influence may be underestimated.

REFERENCES

Eagly,AH & Chaiken,S (1993) **The psychology of attitudes**. Fort Worth: Harcourt Brace Jovanovich College Publishers.

Eiser,RJ & Gentle,P (1989) Health behaviour and attitudes to publicity camapigns for health promotion. **Psychology and Health, 3**, 111-120.

Haskell,WL, Montoye,HJ & Orenstein,D (1985) Physical activity and exercise to achieve health-related physical fitness components. **Public Health Reports, 100**, 202-212.

Maibach,E, Flora,JA & Nass,C (1991) Changes in self-efficacy and health behavior in response to a minimal contact community health campaign. **Health Communication, 3,** 1-15.

Ommundsen,Y & Aarø,LE (1995) Stages of change for exercise behavior: Social cognitive and demografic correlates. **Corpus, Psyche et Societas, 2**, 41-60.

Preston,M, Baranowski,T, Higginbotham,JC (1988) Orchestrating the points of community intervention: a diffusion strategy. **International Quarterly of Community Health Education, 9,** 11-34.

Redman,S, Spencer,EA & Sanson-Fischer,RW (1990) The role of mass media in changing health-related behviour: a critical appraisal of two models. **Health Promotion International, 5,** 85-101.

Aarø,LE (1991) Fitness promotion programs in mass media - Norwegian experiences. I: Oja, P & Telema,R (red). **Sport for all.** Amsterdam:Elsevier Science Publishers B.V., s.193-200.

THE ROLE OF MOVEMENT IN PERCEPTION

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KEYWORDS movement, perception, information, eye/head movements, sport

INTRODUCTION

In Gibson's theory of direct perception (1979/1986), perception is seen as an active pickup of meaningful information specifying action possibilities, or affordances. Affordances are the behavioral possibilities of an environmental layout taken with reference to a particular animal. A ball, for instance, affords throwing, hitting, catching, avoiding, or being hit in the head. Water affords drinking, swimming, splashing but it does not offer a surface of support for animals like us, although it may for other organisms. The important thing is that the description of the environment is in terms of possibilities for behavior. And the claim is that information specifying these affordances is present in the structure of light, sound, etc. and will be picked up by the active (moving) animal. In this view perception is no longer conceived as the impingement of stimuli onto a (qua movement) passive observer. Instead, perception entails activity and this activity does not refer to cognitive or internal activity but to activity in the sense of moving (e.g., locomoting, hefting, rubbing). Thus, in this view movement is very important to perception.

The goal of this paper is to discuss some of our experiments that were designed to investigate the role that movement plays in the perception of affordances and the pick up of perceptual information. In addition, we will discuss some implications of our findings for sport.

THE RELEVANCE OF MOVEMENT FOR PERCEPTION

Just as in daily life in general the perception of affordances is also important in sports. In fact, many sports consist for a major part of creating action possibilities by a player or team while preventing the opponents to do the same thing. It is important to perceive what the possibilities are in a certain game situation. Is it possible to reach the ball in time (e.g., in tennis, basketball, soccer, volleyball, or baseball)? Is it possible to pass the ball (safely) to a sprinting team mate (e.g., in soccer or basketball)? Is it possible to score from this position? Is it possible to reach the next base before the ball does in baseball?

Perceiving these action possibilities, affordances, is not a static affair. In most cases seeing a possibility for action occurs while moving, that is, while running, jumping, approaching the net (in tennis) etc. Obviously, movement will play an important role in perception in these cases.

In several experiments the influence of movement on perception was investigated. First, it was tested whether the perception of catchableness of fly balls in baseball is improved by movement. Second, to confirm the generality of the relevance of movement for perception its influence was observed outside the sport setting, namely, in traffic. Third, in two experiments the role of eye and head movements in picking up information for catching fly balls was revealed.

Perceiving catchableness

In baseball it is often important to quickly perceive whether or not a ball is catchable before it hits the ground. The catchableness of a fly ball depends on whether the catcher can get to the ball in time; accurate judgments of catchableness must reflect both spatial and temporal aspects. Consequently information about the moving fly ball must be related to the information about possible running actions. Only when the catcher is running is perceptual information about this running directly available and is accurate perception of catchableness on that basis possible.

We examined the perception of catchableness under conditions of restricted information pickup (Oudejans, 1996; Oudejans, Michaels, Bakker, & Dolné, 1996). In three experiments, executed in a big gymnasium (height 9 m), tennis balls were projected with a high curve in the sagittal plane

of the observer. The first experiment compared perceptual judgments with actual catching and revealed that stationary observers (none of the observers in this experiment played baseball) are indeed poor perceivers of catchableness, as would be expected by the lack of information about running capabilities. In the second experiment, subjects saw the first second of ball trajectories before their vision was occluded (total flight times were about 2 s). In one condition, they started to run (as if to catch the ball) before occlusion; in another, they remained stationary. Judgments made while moving were better than judgments made while stationary, confirming that only when information about the ball *and* about running actions is perceptually available is more accurate perception of catchableness possible (Oudejans, Michaels, Bakker, & Dolné, 1996). In another experiment using 13 *experienced baseball players* (Oudejans, 1996, Chapter 5) the relevance of movement for the perception of catchableness was confirmed.

Perceiving the crossability of a busy street

In a small study on road-crossing behavior we have shown that the important role of movement in perceiving affordances is not restricted to the game of baseball (Oudejans, Michaels, van Dort, & Frissen, 1996). The crossableness of a road in front of oncoming traffic is also an affordance in which one must cover a certain distance (the width of the road) in less than a certain time (the interval until the next vehicle arrives). It was hypothesized that, as in the fly ball situation, perception of crossableness would be more accurate given perceptual information about walking abilities (e.g., walking speed). Only when one is already walking is such information directly available. Hence, the critical time gap separating whether one waits or crosses, will correspond more closely to the actual time taken to cross for pedestrians who are still on the move than for pedestrians who are standing still at the kerb. Data gathered from road-crossing pedestrians in a natural setting clearly support this hypothesis indicating that perceptual information about ongoing action permits more accurate perception of certain affordances, in this case the crossableness of a road.

The role of eye and head movements in catching fly balls

In the above described examples of affordances, movement provided necessary information about the observer's own action system (his running and walking speed, respectively). That is, the movement of the observer was needed to provide information about the observer himself (in relation to the environment). In two additional experiments we (Oudejans, Michaels, Bakker, & Davids, 1999) revealed that movement also plays a crucial role in picking up information about the environment. Insight into perception was sought in a study of the perceptual mechanisms that are used for catching fly balls. First, it was established that when observers are confronted with fly balls they do not fixate their gaze on a stationary point in the environment. Instead, they track the ball with eye and head movements. Subsequently, it appeared that appropriate running to catch luminous fly balls in the dark (without any visual background whatsoever) was possible. Thus, running to catch in the dark, with nothing but the ball visible was no problem. Assuming that in the dark balls catchers also tracked the ball with their gaze, this, at least, implies that information for catching fly balls is not necessarily picked up via motion of the ball on the retina. Other perceptual systems (e.g., vestibular or proprioceptive) for instance, also have to be involved. Going even further, it implies that the information used for catching fly balls is picked up by virtue of the eye and head movements made.

Thus, our findings show that movement is essential for perception, in the first place because it may provide the necessary information about the observer's action possibilities in relation to the environment and, second, because it may be the mechanism by which information about the environment is picked up.

MOVEMENT, PERCEPTION AND SPORT

Whether being in motion plays just as important a role in the perception of affordances in other sports needs to be investigated in future research. Perhaps a goalkeeper in soccer who is moving is also better in judging a (high) ball than a stationary goalkeeper. But in this case "unlimited" running as in baseball is not always an option because the goal cannot simply be abandoned. Obviously there is an interaction between game rules and affordances. The rules constrain the possible actions in a specific way which also influences the role that being in motion can play. Nevertheless it seems sensible, if possible, to use the enhancing role of movement on perception in practice, e.g., by training certain skills while in motion rather than from a stationary position.

The role of (eye/head) movements to pick up information about the environment (e.g., an approaching ball) might have interesting implications for the learning and execution of sport skills. This is revealed by the work of Vickers and colleagues (Adolphe, Vickers, & Laplante, 1997; Vickers, & Adolphe, 1997). They found that gaze behavior of non-expert volleyball-pass-receivers was chaotic compared to that of expert pass receivers (Vickers & Adolphe, 1997). The experts detected the ball early and continued tracking for almost half a second before initiating stepping. The experts' stepping behaviors were delayed compared to that of the non-experts, yet they were "more decisive, needing fewer corrections and ball reception [occurred] at more optimal locations" (p. 26). These findings are in close correspondence with our own findings of fly ball catching by experts and non-experts (Oudejans, Michaels, & Bakker, 1997). We too found that non-experts initiated their movements for catching faster than experts but they did so at the cost of accuracy. The experts were more accurate in initiating their movements and appeared to wait until they had detected the necessary information before taking of in the correct direction.

If information pick up entails having the proper eye and head movements, as is suggested by these results, perhaps providing feedback about gaze behavior during sport (called vision-in-action feedback by Adolphe et al., 1997) and subsequently training this behavior (i.e., training ones visual attention) may offer an additional way to improve performance on a certain skill, next to the more traditional training of tactics and physical techniques. A first indication that this is the case is provided by Adolphe et al. (1997). Training the visual attention of the non-experts described above significantly improved the pass reception and set up performance of these players over the three years following the visual attention training.

REFERENCES

Adolphe, R., Vickers, J.N., & Laplante, G. (1997). The effects of training visual attention on gaze behaviour and accuracy: A pilot study. **International Journal of Sports Vision, 4,** 28-33.

Gibson (1986). **The Ecological Approach to Visual Perception**. Hillsdale, NJ: Erlbaum (originally published in 1979).

Oudejans, R.R.D. (1996). **The optics and actions of catching fly balls (PhD thesis).** Enschede: PrintPartners Ipskamp.

Oudejans, R.R.D., Michaels, C.F., & Bakker, F.C. (1997). The effects of baseball experience on movement initiation in catching fly balls. **Journal of Sports Sciences, 15,** 587-595.

Oudejans, R.R.D., Michaels, C.F., Bakker, F.C., & Dolné, M. (1996). The relevance of action in perceiving affordances: Perception of catchableness of fly balls. **Journal of Experimental Psychology: Human Perception and Performance, 22,** 879-891.

Oudejans, R.R.D., Michaels, C.F., van Dort, B., & Frissen, E.J.P. (1996). Perceiving the crossableness of roads. **Ecological Psychology, 8,** 259-267.

Oudejans, R.R.D., Michaels, C.F., Bakker, F.C., & Davids, K. (1999). Shedding some light on catching in the dark: Perceptual mechanisms for catching fly balls. **Journal of Experimental Psychology: Human Perception and Performance (in press).**

Vickers, J.N., & Adolphe, R.M. (1997). Gaze behaviour during a ball tracking and aiming skill. **International Journal of Sports Vision, 4,** 18-27.

HEALTH PROMOTION BY MEANS OF SPORTS ACTIVITIES - FROM THEORY TO PRACTICE: CONCLUSIONS OF A HEALTH PROMOTION PROJECT IN GERMANY

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(a) Key Words:
Health promotion, exercise programmes, evaluation, riskfactor, coping, ressources, adherence

(b) Introduction

Most physicians are confronted in their daily work with patients who show a multiple set of complaints; e.g. risk factors like high blood-pressure, overweight combined with backpains and tenseness. In addition many of these patients feel distressed and their physical fitness is located below a medically acceptable degree. Usually these health complaints originate in wrong habits or an individuals life-style. Without behavioral changes and corresponding therapeutical treatment they would inevitably lead to grave bodily defects.
Within the „Modell of health promotion by means of exercise activities" members of the medical profession, health insurances and sport clubs cooperate within the aim of offering affected patients an exercise programme adapted to each individual frame of complaints. At the same time the programme was intended to help patients overcome barriers of participation and find assess to the programme.
The following paper reports about the theoretical framework of the modell, discussed five aims concerning health promotion exercise programmes. The exercise programmes will be shortly described and a brief overview of the evaluation phases will be reported.

(c) Theoretical background and criteria of quality

The research in the last years concerning the different aspects of health sciences shows mainly the following four models of health and health promotion: These are the models of resources, risk factors, coping, and adherence to health behaviour. From these four models you can draw out five important critera concerning the quality of health promotion exercise programmes:

- coping with health complaints and mood disturbances
- decrease of risk factors
- strengthening of physical health resources
- strengthening of psycho-social resources
- reduction of barriers of participation and increase of adherence.

Health resources are related to the physical and psycho-social determinants of „being healthy". Physical activity is strengthening the physical resources of the cardiovascular and the skeleton and muscular system. Exercise is the reason for the adaptation of the organism by training the abilities strength, endurance, flexibility, coordination and relaxation. Without the necessary stimula of the physical systems the body will show a readaptation and degeneration. Logically, lack of exercise becomes a risk factor. The model of risk factors postulates that complaints and deseases often come along with a low fitness level and an unhealthy lifestyle. In this case intervention starts by changing the risk factors. Lack of activity is a „risk factor of

the risk factors", that means he comes along with of many other risk factors. Research shows that regular physical activity is influencing primary risk factors like overweight, high blood pressure, hyperglycaemia and hypercholesteremia.
Actually psychologists are discussing several theories concerning psycho-social resources of health. Physical activity and exercise may influence the emotional (mood), the intellectual (motives, self-efficacy) and the social (social support, compliance) situation of the individual.
Comparable to the above mentionned relationship between the strengthening of the physical resources and the decrease of the risk factors, there is also a logical relationship between strengthening of psycho-social resources and coping with health problems.
Lazarus and Folkman (1984) postulate two functions of coping: a problem orientated and an emotional orientated (palliation) coping function. The problem orientated function is in fact diminishing an existing physical or psychological health problem. The emotional orientated function is adjusting the emotions concerning a problem. Exercise is able to influence positively both coping functions by living positive emotions and diminishing existing health complaints.
Without regular physical activity there are no such effects. Therefore health promotion must be combined by longterm adherence to the health behaviour factor „exercise". Dropout rates are relatively high in most health promotion exercise programmes. The dropout is influenced by many determinants (Pahmeier, 1994). There are many overlappings between psycho-social resources and potential dropout determinants. By strengthening the psycho-social resources you increase at the same time the adherence factors.

(d) Target groups and programmes

Our working group has combined the quality factors described above with practical exercise programmes. The programmes focuse on a specific target group: adult men and women who want to start exercise after a longer period of inactivity. The health status of these persons is diminished and they show risk factors and health complaints.

There are two different variations of the group exercise programme. The first programme can be realised in a gymnasium, the second one in a fitness-center by using fitness equipment. Both programmes lasted one year, with one training session of 90 minutes per week. Every session has the following schedule: Opening, warm-up, cardio-vascular training, strength- and flexibility training, relaxation, closing and information. The information part is not necessarily realised during every training session.

(e) Evaluation

Up to now, the effects of the programmes described above were evaluated in two research studies (Brehm & Pahmeier, 1992; Brehm, Pahmeier & Tiemann, 1997). All five quality criteria showed positive effects. In a big sport club in the area of the Bavarian towns Erlangen-Nürnberg the third examination/evaluation started in 1997.

(f) References

Brehm, W. & Pahmeier, I. (1992). *Gesundheitsförderung durch sportliche Aktivierung als gemeinsame Aufgabe von Ärzten, Krankenkassen und Sportvereinen.* Gesundheitsförderung Band 3. Bielefeld: IDIS.

Brehm, W., Pahmeier, I. & Tiemann, M. (1997). Gesundheitsförderung durch sportliche Aktivierung. Qualitätsmerkmale, Programme, Qualitätssicherung. *Sportwissenschaft,* 27, 38-59.

Lazarus, R.S. & Folkman, S. (1984). *Stress, appraisal, and coping.* Berlin, New York: Springer.

Pahmeier, I (1994). Drop-out und Bindung im Breiten- und Gesundheitssport. *Sportwissenschaft*, ,24 (2), 117-150.

LIFE EVENTS, COPING SKILLS AND PERSONALITY: A STUDY OF THEIR EFFECT ON THE PREDICTION AND REHABILITATION OF SPORT INJURIES

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KEYWORDS

Sport Injury; Life Events; Coping Skills; Personality; Stress-Response

INTRODUCTION

The sport injury is part of an athletes life. It can happen with himself, with a teammate or an opponent. The athlete should cope effectively with this ultimate stressor to decrease the possibility of an exacerbated response to potentially stressful situations that are common in sports.

The growing field of the psychology of sport injury is based, essentially, on the models from Williams & Andersen (1998) to explain the predisposition of the athletes on sustaining injuries, and in the Wiese-Bjornstal, A. Smith, Schaffer, & Morrey (1998) model that integrates this predisposition and extends it to the rehabilitation process.

The purpose of our investigation was two folded: (1) study the injury predisposition during a sport season; and (2) connect it to the rehabilitation results from injuries sustained during that period.

METHOD AND PROCEDURE

Subjects. Our sample included 97 subjects from four professional league basketball teams, two sub-22 basketball national teams and one rhythmic gymnastic national team. We gathered complete data from 57 athletes (58.8%), from which 20 were females (35.1%) and 37 males (64.9%). The mean age of the sample was 20.2 years (*SD*=5.6).

Instrumentation. We have used the Portuguese and English versions of the following instruments in order to gather data from the north-american players: Life Stress – *Sport Experiences Survey* – SES – (R. Smith, Ptacek, & Smoll, 1992); Personality –*Eysenck Personality Inventory* – EPI – (Eysenck & Eysenck, 1968); Psychological Coping Skills – *Athletic Coping Skills Inventory* – ACSI-28 – (R. Smith, Smoll, Ptacek, & Schutz, 1995); Emotional State – *Profile of Mood States* – POMS – (McNair, Lorr, & Droppleman, 1971). Injury assessment. We defined injury as a medical problem resulting from athletic participation that restricted subsequent participation for at least 1 day beyond the day of its occurrence (R. Smith, Smoll, & Ptacek, 1990). Initial Questtionnaire. Included demographic questions concerning the athlete's age, gender, years in competition and in current level and academic status. We also assessed the *injury history* and *injury expectancies*. The latter was measured through a question where the athlete were asked to estimate on a 100-point scale the probability that they would be injured during the upcoming sport season.

Procedure. We designed a prospective study executed during the 97-98 sport season (August 97 – June 98). The athletes that have agreed to participate in this study completed: (1) during the first week of practice, the Initial Questionnaire and the POMS; (2) after 3-4 months the ACSI-28, the EPI and an additional POMS; and (3) 2-3 weeks before the end of the season the SES and another POMS. Each medical staff got a diary designed for the gathering of injury data (predicted and observed days lost, type, severity, game/practice situation). The teams were visited on a weekly basis to reduce the recording problems. At the end of the season we summed the days missed and corrected them with the individual exposure (minutes

on practice/game situations) to find a injury index (days missed/exposure).

The statistical procedures used principal components, comparative, and regression analysis, to look for the adjustment of our data to the models and, secondly, for a combination of variables that better describe our results. The order of variable entry into each regression model followed the general guidelines set forth by Baron & Kenny (1986): (1) stress measure – divided in negative and positive; (2) moderators; (3) Stress x Moderator Interaction(s). The resulting models were as the following example: Negative Life Events (NLE), Psychological Coping Skills (PCS), Personality (P), NLE x PCS, NLE x P; NLE x PCS x P. In the latter procedure we used stepwise multiple regression with the variables that were significantly correlated with the injury index. We have looked to the final variance and partial increment of the R^2 in the regression analysis and for the effect size in the comparative study.

RESULTS

TABLE 1 – Results from the injury predisposition study

Analysis	Comparative	Correlacional and Regression			
Variable	Group Differences	Correlation w/ Injury Index	Regression with NLE	Regression with PLE	Stepwise Regression
> NLE	**> injuries** U=-3.26, *p*=.001 (-.85)	**> injuries** τ(57)=.31, p<.01	**> injuries** β=3.27, p=.030	---	**> injuries** β=.79, p<.001
> PLE	**< injuries** t(55)=2.00, *p*=.043 (.57)	**< injuries** r(57)=-.27, p<.05	---	**< injuries** $\chi 2(7,n=57)=17.62$, p<.05	---
> Coping	---	---	---	---	---
> Extroversion	**< injuries** n.s.	**< injuries** τ(57)=.28, p<.05	**< injuries** β=-.32, p=.008	**< injuries** β=-.01, p=.018	**< injuries** β=-.63, p<.01
> Neuroticism	---	---	---	---	---
> Injury Expectancies	**> injuries** n.s.	**> injuries** r(57)=.27, p<.05	---	---	**> injuries** β=.28, p<.05

Notes: NLE – Negative Life Events; PLE – Positive Life Events. > PLE <injuries will correspond to lesser injuries among subjects with higher PLE, for example.

TABLE 2 – Results from the rehabilitation problems study

Variable	Differences Injury Index	Rehabilitation Differences	Stepwise Regression
> NLE	---	**< faster** n.s.	---
> PLE	---	---	---
> Coping	---	**> faster** F(2,19)=3.79, p<.04 (1.32)	**> faster** β=-.53, p<.01
> Extroversion	**< Injury index** n.s.	**> faster** n.s.	---
> Neuroticism	**> Injury index** n.s.	---	---
> Injury Expectancies	---	**< faster** n.s.	---

Notes: NLE – Negative Life Events; PLE – Positive Life Events. faster – faster than predicted rehabilitation period, therefore, > Coping > faster will correspond to faster than predicted rehabilitation period among subjects with higher coping skills results, for example.

DISCUSSION AND CONCLUSIONS

Our study replicated the results of the literature consulted in terms of the predictive power of the NLE (e.g., Williams & Andersen, 1998, 1997; R. Smith et al., 1990, 1992; Petrie, 1993). The PLE influenced the variance of the injury index in a opposite pattern than observed with the studies we considered (Petrie, 1993), as it looks that it contributes to smaller injury

indexes. We think that the PLE might yield a buffer effect on the other variables examined, reducing factors like the competitive anxiety and the negative emotional states which are related to altered atencional states and problematic cognitive appraisals (Williams & Andersen, 1998; Petrie, 1993).

The more extroverted were associated with smaller injury indexes and faster than predicted rehabilitation periods. The extroverted should have a larger social support network, better communication skills and alert its coaches and colleagues of a risky situation faster that an introverted, factors that might reduce the injury index and enhance the rehabilitation (Wiese-Bjornstal et al., 1998; Hardy, Richman, & Rosenfeld, 1991).

The coping skills were associated with rehabilitation periods smaller than predicted. We found some support to this results in the studies from A. Smith (1996) and in the construct of allostasis proposed by McEwen (1998). Given the subjectivity of the variable *difference between predicted and observed rehabilitation period* we recommend further investigation to study this results.

The results with the injury expectancies supported the theory of the self-fulfilling prophecy, extending its influence to the slower than predicted rehabilitation periods. Bar-On, Gilutz, Maymon, Zilberman, & Cristal (1994) explained this fact referring to the confirmation of the initial causal attributions, which might have conducted to reinforcement of the negative conditions of the injury and to more problems in the rehabilitation process.

This study yielded some results that should be replicated in larger samples (to strength the regression analysis), with more objective measures of the predicted rehabilitation periods, repeated measures from the emotional states, coping skills and life events, and use a multidisciplinar approach with measures from the medical, physiological, and physical methodologies.

REFERENCES

Bar-On, D., **Gilutz**, H., **Maymon**, T., **Zilberman**, E., & **Cristal**, N. (1994). Long-term prognosis of low-risk, post-MI patients: the importance of subjective perception of disease. *Europpean Heart Journal, 15(12)*, 1611-5

Baron, R. M., & **Kenny**, D. A. (1986). The Moderator-Mediator Variable Distiction in Social Psychologycal Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology, 51-6*, 1173-1182

Eysenck, H., & **Eysenck**, S. (1968). *Eysenck Personality Inventory Manual*. San Diego, CA: EdITS

Hardy, C., **Richman**, J., & **Rosenfeld**, L. (1991). The Role of Social Support in the Life Stress/Injury Relationship. *The Sport Psychologist, 5*, 128-139.

McEwen, B. S. (1998). Protective and Damaging Effects of Stress Mediators. *New England Journal Medicine, 338(3)*, 171-179

McNair, D. M., **Lorr**, N., & **Droppleman**, L. F. (1971). *Manual for the Profile of Mood States*. San Diego, CA: EdITS

Petrie, T. (1993). Coping Skills, Competitive Trait Anxiety and Playing Status: Moderating Effects on the Life Stress-Injury Relationship. *Journal of Sport & Exercise Psychology, 15*, 261-274

Smith, A. M. (1996). Psychological Impact of Athletic Injuries. *Sports Medicine, 22*, 391-405.

Smith, R., **Ptacek**, J., & **Smoll**, F. (1992). Sensation Seeking, Stress and Adolescent Injures: A Test of stress buffering, risk-taking, and coping skills hypotheses. *Journal of Personality and Social Psychology. 62*, 1016-24

Smith, R., **Smoll**, F., & **Ptacek**, J. (1990). Conjunctive moderator variables in vulnerability and resiliency research: Life stress, social support and coping skills, and adolescence sport injuries. *Journal of Personality and Social Psychology. 58*, 360-369

Smith, R.E.; **Schutz**, R.; **Smoll**, F. & **Ptacek**, J., (1995) - Development and Validation of a Multidimensional Measure of Sport-Specific Psychological Skills: The Athletic Coping Skills Inventory - 28. *Journal of Sport and Exercise Psychology*, 17, 379-398

Wiese-Bjornstal, D. M, **Smith**, A. M., **Schaffer**, S. M., & **Morrey**, M. A. (1998). An Integrated Model of Response to Sport Injury: Psychological and Sociological Dynamics. *Journal of Applied Sport Psychology, 10*, 46-69.

Williams, J. M., & **Andersen**. M. B. (1997). Psychosocial Influences on Central and Peripheral Vision and Reaction Time during Demanding Tasks. *Behavioral Medicine. 22*, 160-167

Williams, J. M., & **Andersen**. M. B. (1998). Psychosocial Antecedents of Sport Injury: Review and Critique of the Stress and Injury Model. *Journal of Applied Sport Psychology, 10*, 5-25

A SHORT VERSION OF THE PERCEIVED MOTIVATIONAL CLIMATE IN PHYSICAL EDUCATION CLASS QUESTIONNAIRE

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KEY WORDS
Questionnaire, motivational climate, assessment, physical education, Greece

INTRODUCTION

According to goal perspective theory (Nicholls, 1989), in achievement domains two major goals predominate. When a task goal is salient success is defined as personal improvement, satisfaction is derived by personal accomplishment and effort is conceived as the major cause of success. People set challenging personal goals, they view mistakes as part of learning and they try hard to develop their ability and learn new skills. When an ego goal predominates, success is defined as better performance than others and satisfaction is derived by establishing superiority. People try to overcome others and worry about mistakes particularly when they lack ability.

Goal perspectives vary as a function of individual differences and situational demands. Papaioannou (1994) developed an instrument assessing students' perceptions of the task- and ego-involving climate in the physical education lesson. This instrument has many items and is time-consuming. The purpose of this paper is to present a shorter version of the original instrument.

Results from two studies are presented. The first study examined: (1) the factor structure of the new short version, (2) the association of the new instrument with the original instrument assessing perceived motivational climate, and (3) the contribution of the new scales in the prediction of intrinsic motivation. A stable two-factor solution was expected. Positive associations among the new and the old scales assessing similar constructs were hypothesized. The two climate scales were expected to explain additional variance of students' intrinsic motivation from that already explained by goal orientations. In the second study, following a lesson consisting of task-involving tasks and a lesson comprising ego-involving tasks the short version was administered. It was expected that the new instrument would capture the goal structure of the two lessons.

STUDY 1

Participants

Participants were 674 Greek students attending 30 schools (n = 319 males, n = 355 females), aged 10 $\pm$ 0.5 years (n = 182), 12 $\pm$ 0.5 years (n = 249) and 15 $\pm$ 0.5 years (n = 243).

Instruments

Learning and performance orientations in the physical education class questionnaire (LAPOPECQ). This 27-item instrument comprises five scales: (1) two task-involving scales assessing teacher-initiated and student-initiated learning orientation in the physical education lesson (2) three ego-involving (or performance-oriented) scales assessing students' competitive orientation, students' worries about mistakes and outcome orientation without effort. Students were requested to think about their physical education class and respond on five-point Likert-type scale (1=tsrongly disagree, 5=strongly agree).

Short Version of the perceived motivational climate in the physical education lesson. This instrument assessed the task- and ego-involving climate created by the physical education teacher. It comprised the teacher-initiated learning orientation scale of the LAPOPECQ (6 items) and 6 new items assessing teacher-initiated competitive orientation in the physical education lesson. In a previous study (Papaioannou, 1998) the results from exploratory factor analysis revealed a two-factor solution assessing teachers' emphasis on learning and competition respectively.

Intrinsic Motivation. This was assessed using effort and enjoyment subscales of the Intrinsic Motivation Inventory (McAuley, Duncan & Tammen, 1989), adapted for the Greek physical education lesson.

Confirmatory Factor Analysis

The results from the confirmatory factor analysis supported the two-factor structure of the short version assessing perceived motivational climate in the physical education class (χ^2 = 167.4, df = 53, GFI = .96, AGFI = .941, RMSR = .06, TLI = .91). The reliability α for the teacher-initiated learning orientation scale was .74 and for the teacher-initiated competitive orientation scale was .71.

Correlations

The scale assessing teacher's emphasis on competition was positively related to the scales measuring students' competitive orientation ($r = .39$; $p<.001$), students' worries about mistakes ($r = .30$, $p<.001$) and outcome orientation without effort ($r = .42$, $p<.001$). As was expected, there was a strong positive association between teacher-initiated learning orientation and students' learning orientation ($r = .72$, $p<.001$).

Hierarchical Regressions

Two hierarchical regression analyses were computed using enjoyment and effort as dependent variables. The following variables were entered in steps 1, 2, 3 and 4 respectively: ego orientation, task orientation, teacher-initiated competitive orientation and teacher-initiated learning orientation. As is shown in TABLE 1, task orientation was a significant predictor of enjoyment and effort. The addition of perceived teacher's emphasis on learning increased further the prediction of enjoyment and effort. Ego orientation and perceived teacher's emphasis on competition were not significant predictors.

TABLE 1. Increment of R^2 after hierarchical regression analyses

Step	*Predictors*	*Enjoyment*	*Effort*
1	Ego orientation	.00	.00
2	Task orientation	.21*	.29*
3	Teacher-initiated competitive orientation	.00	.00
4	Teacher-initiated learning orientation	.10*	.07*

(*): $p<.001$

STUDY 2

Method

Participants were 239 students (n = 131 males, n = 108 females) aged M = 13 (SD = $\pm$0.5) who were involved in ten physical education classes in junior high schools in Komotini, Greece. Six months after the beginning of the academic year the students participated in a 45

minutes lesson containing four task-involving volleyball drills and in a 45 minutes lesson consisted of three ego-involving volleyball drills. Papaioannou and Kouli (in press) present extended information about the experimental method. After the end of the lesson the students responded on the short version assessing perceived motivational climate in physical education class. The stem was modified to «Today, in the physical education lesson....» and the items were used in the past. For example, one of the items of the teacher-initiated learning orientation scale was «the teacher was completely satisfied when every student's skills were improving».

Results

In the lesson containing the task-involving tasks the students perceived that their teacher gave stronger emphasis on learning ($M = 24.9$, $SD = 3.9$) than in the lesson containing the ego-involving tasks ($M = 23.1$, $SD = 4.1$, $t = 6.0$, $p<.001$). On the contrary, the students reckoned that in the lesson containing the ego-involving tasks the teacher gave stronger emphasis on competition ($M = 16.6$, $SD = 4.9$) than in the lesson including the task-involving tasks ($M = 13.9$, $SD= 4.7$, $t = 7.6$, $p<.001$).

DISCUSSION

The first study supported the construct validity of the short version assessing perceived teacher-initiated motivational climate in the physical education lesson. Two stable and reliable factors emerged. The associations between the scales of the short version and the scales of LPOPECQ provided evidence for concurrent validity. The scale measuring perceived teacher-initiated learning orientation explains adds to the perdiction of students' intrinsic motivation which was already explained by individual differences in task-orientation. The results from the second study suggested that the short measure of the perceived motivational climate in the physical education lesson captures changes in goal structure of the physical education environment. In sum, the results from the two studies supported the validity of the new instrument.

REFERENCES

Duda, J.L., & Nicholls, J.G. (1992). Dimensions of achievement motivation in schoolwork and sport. Journal of Educational Psychology, 84, 290-299.

McAuley, E., Duncan, T., & Tammen V. (1989). Psychometric properties of the intrinsic motivation inventory in a competitive sport setting: A confirmatory factor analysis. Research Quarterly for Exercise & Sport, 60, 48-58.

Nicholls, J.G. (1989). The competitive ethos and democratic education. Cambridge: Harvard University Press.

Papaioannou, A. (1994). The development of a questionnaire to measure achievement orientations in physical education. Research Quarterly for Exercise and Sport, 65, 11-20.

Papaioannou, A. (1998): Students' perceptions of the physical education class environment for boys and girls in Greece and the perceived motivational climate. Research Quarterly for Exercise & Sport, 69, 267-275.

Papaioannou, A., & Kouli, O. (in press): The effect of task structure, perceived motivational climate and goal orientations on students' intrinsic motivation and anxiety. Journal of Applied Sport Psychology.

IMAGERY TRAINING WITH MOTORCYCLISTS

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Key words: Imagery; Simulators; Motorcycling; Visual Memory.

I. INTRODUCTION

The procedures that make us imagine, are those wich excite our scientific curiosity, more specifically, relating to the functional procedures of the imagetic load. Our main doubt is on the components characterization level of that load. What's the volume? What's the intensity of an imagery charge? These are the issues to approach the pratical aplication, searching more and more a prescription of a mental training charge, similar to the methodology of physical training.

It seems relevant to us to know the concept we are going to deal with along this research - the imagery. The most up-to-date definition of this concept is introduced by Abernethy et al(1997), imagery is defined as a skill which involves all the sensorial mechanisms to create or recreate an experience in the mind.

2. SAMPLE

We used in our research a sample of thirty four subjects, male, who are divided accordind to the table I.

	Control	Experimental I	Experimental II	non motorcyclists
N	7	7	7	13
Mental training	No	yes	yes	no
Number of sessions	6	6	6	Only the first

Table I. Dividing the sample elements.

The reason this sample is divided in several groups is due to the modality adopted by the experimental model, which implies that the independent variables have different applications according to the group.

3. TASK

Our task consists on a computer game which simulates a motorcyclist driving on a track. The subject is alone on a track without any opponent, because we think this is a variable which, can have some influence on the performance. Although the possibility of the gear change is manual, we chose an automatic change, because we tried to reduce all the motor schemes which can influence the learning among subjects.

The main characteristic of our research, is the prescription of experimental sessions. We present the table II for a better understanding.

Control	Experimental I	Experimental II
Three series of three laps. Between each serial - distracting task	Three series of three laps. Between each serial - relaxation - imagery of **one lap** around the track.	Three series of three laps. Between each serial - relaxation - imagery of **three laps** around the track.

Table II. Characterization of experimental sessions.

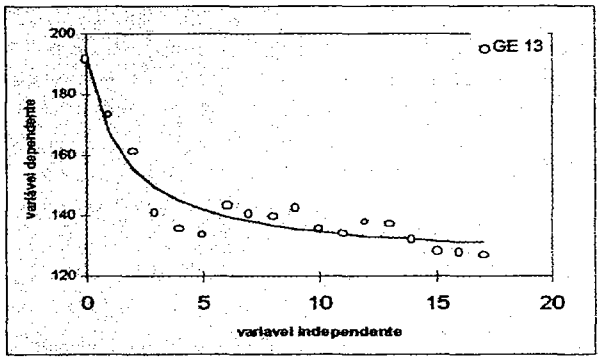
4. AIMS.

As **principal aim**,we intend to know whether the mental training improves the result of the performance.

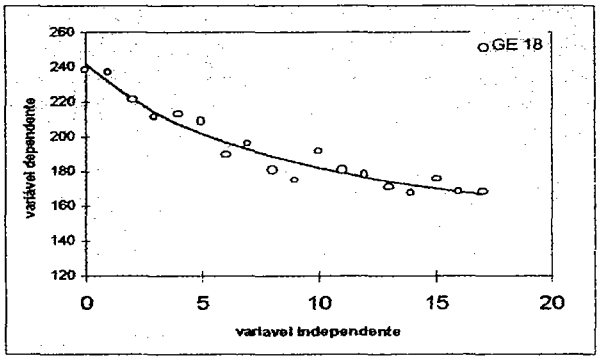
As **specific aim**,we intend to know whether different mental training prescriptions lead to different performance results.

5. DATA ANALYSIS.

To the data analysis of the actual research and because we have adopted a methodology which hasn't established a basal level of performance on the task, we chose a mathematic model from which it could be possible the extraction of a parameter elucidating the evolution on the task of each subject(value k on the table III). The graphics I and II are visualization examples, of the data performance of each subject.



Graphic I



Graphic II

6. PRESENTATION OF RESULTS.

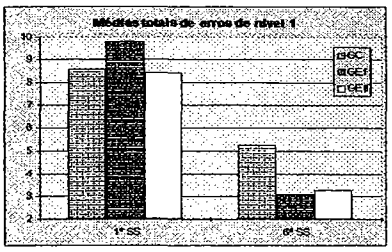
6.1. Quantitative analysis of performance.

	Control	Experimental I	Experimental II
Average of value k	4,994	5,641	**4,344**
Standard deviation	2,379	2,963	4,626
p-value		0,790	

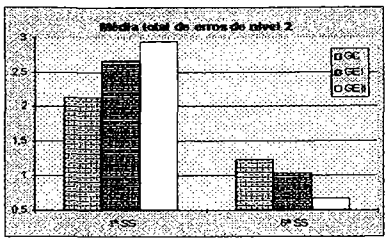
Table III. Average and standard deviation of the evolution parameter on each group.

Although the results don't show important differences, there is a tendency for the second experimental group to have a better learning values(table III).

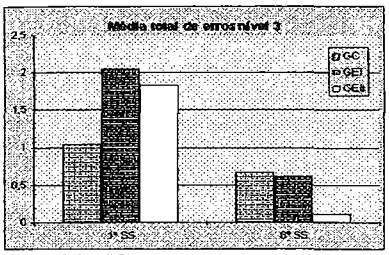
6.2. Qualitative analysis of performance - errors.



Graphic III



Graphic IV



Graphic V

	Level 1	Level 2	Level 3
CG	3,33	0,90	0,38
1st EG	6,67	1,61	1,21
2st EG	5,17	2,27	1,72
p-value	0.362	0.109	0.101

Table IV comparing the amplitude of errors between the first and sixth session.

Once more the p-values show there are no statistically significant differences, which conditions all our discussion of results on a basis of value tendencies. The higher values show a bigger decrease on the error average between the first and the sixth session, indicating the evolution tendencies in the learning of each group. This can easily be seen in graphics III, IV and V.

7. DISCUSSION OF RESULTS.

The non-existance of significant differences is a fact that can be justified by the exclusion of any kind of information relating the meaning of image. On the present research, when we asked the subjects to imagine themselves taking a lap on the circuit, this indication is towards the imagination of the cognitive planing of the task, that is, to memorize the circuit outline.

The analysis of critical components, such as the trajectory of a bend, causes information on which is possible training the meaning of image. If we take into account that each bend is different, then the contents of an imagery programme can have no end.

8. CONCLUSIONS.

1) The circuit memorization isn't enough to condition differences on the task learning, between groups.

2) Prescriptions which emphasize differences of imagery volume, in detriment the meaning of image, lead us to the conclusion that different imagery training prescriptions don't lead to different performance results.

	Nível 1	Nível 2	Nível 3
GC	3,33	0,90	0,38
GE I	6,67	1,61	1,21
GE II	5,17	2,27	1,72
p-value	0.362	0.109	0.101

Quadro IV. Comparação da amplitude de erros entre a 1ª e 6ª sessão.

SPORT PRACTICE AND MULTIDIMENSIONAL SELF-CONCEPT IN OLDER SPANISH ADOLESCENTS

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KEY WORDS: sport practice, multidimensional self-concept, adolescents

INTRODUCTION

Multidimensional approaches to self-concept assessment are more widely accepted than global measures (Marsh & Hattie, 1996). However, we do not have much information about the relationship between sport practice and multidimensional self-concept (see Leith, 1994). In one of our previous studies with adolescents from 11 to 15 years-old (early adolescence), there were significant differences between sport practice groups and sedentary groups for boys in the self-concept domains of Athletic Competence, Physical Appearance and Social Acceptance assessed by 'The Self-Perception Profile for Children'. For girls, there were only significant differences in Athletic Competence (Balaguer, 1998). In this study, we want to see if it is possible to generalize those results to older adolescents. The main focus of the present study is to analyze differences in multidimensional self-concept between four groups of sport practice involvement (sedentary, low, moderate and high practice) with a sample of older adolescents from 15 to 18 years-old.

METHOD AND PROCEDURE

Sample

1038 adolescents, 510 boys (M age=16.36, SD=.93) and 528 girls (M age=16.25, SD=.92), all high-school students from the Valencian Community. The students were between 15 and 18 years of age (M age=16.31, SD=.92). This is a representative sample of the Valencian Community.

Instruments

We used an adaptation of 'The Self-Perception Profile for Adolescents' (Harter, 1988) to measure self-concept. The original instrument consists of 40 items assessing eight self-perceptions in eight domains and 5 items assessing General Self-Worth. However, in our validation of the instrument only six domains emerged as distinct factors (Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Behavioral Conduct and Close Friendship). The General Self-Worth Subscale also emerged as a distinct factor with all five original items.

Sport practice was measured by two questions: Frequency of sport practice and duration of sport practice. We distinguished between four different levels of sport practice: sedentary (never practice sport), low (practice once a week or less), moderate (practice between 2-3 times a week) and high (practice between 4-7 times a week). We have taken the cases in which practice lasted 25-30 minutes or more.

Data analysis

Multivariate analyses of variance were performed in order to test differences in self-concept between the four sport practice groups. Different analyses were done by gender. Post-hoc multiple comparison tests of Student-Newman-Keuls were done to determine which sport practice groups were significantly different from each other.

RESULTS

For boys, sport practice showed a multivariate effect on self-concept domains (Λ Wilks=.72, DF=21, $p < .001$). The univariate F-test confirmed significant differences between the groups of sport practice in Social Acceptance, Athletic Competence and Close Friendship (See Table 1). Post-hoc multiples comparison tests of Student-Newman-Keuls indicated significant differences in: 'Close Friendship' between sedentary and moderate sport practice groups, 'Social Acceptance' between moderate and sedentary groups, between high and sedentary groups and between high and low groups and 'Athletic Competence' between all sport practice groups. In all these cases, the more sport was practiced, the higher the scores were in the self-concept dimensions.

TABLE 1. Self-Concept Domains by Levels of Sport Practice for Boys. Univariate F-test

	Sedentary		Low		Moderate		High		F
	M	SD	M	SD	M	SD	M	SD	
Scholastic C.	2.66	.62	2.70	.62	2.68	.67	2.74	.64	.28
Social A.	2.98	.68	3.11	.67	3.22	.60	3.31	.51	4.91**
Athletic C.	2.17	.57	2.61	.54	2.95	.57	3.14	.54	50.86***
Physical A.	2.65	.85	2.92	.81	2.86	.78	2.86	.85	1.70
Behavioral C.	2.68	.64	2.77	.63	2.77	.61	2.86	.57	1.48
Close F.	2.91	1.03	3.10	.84	3.23	.78	3.19	.76	3.49*
Self-Worth	3.07	.65	3.17	.57	3.11	.59	3.16	.59	.61

*p<.05; **p<.01; ***p<.001

For girls, sport practice also showed a multivariate effect on self-concept domains (Λ Wilks=.76, DF=21, $p < .001$). The univariate F-test confirmed significant differences between the groups of sport practice in Scholastic Competence and Athletic Competence (See Table 2). Post-hoc multiples comparison tests of Student-Newman-Keuls indicated significant differences in: 'Scholastic Competence' between high and sedentary sport practice groups, between high and low groups and between high and moderate groups and 'Athletic Competence' between all groups (except between high and moderate groups). In all these comparisons, the more sport was practiced, the higher the scores were in the self-concept dimensions.

TABLE 2. Self-Concept Domains by Levels of Sport Practice for Girls. Univariate F-test

	Sedentary		Low		Moderate		High		F
	M	SD	M	SD	M	SD	M	SD	
Scholastic C.	2.41	.58	2.50	.68	2.52	.69	2.82	.71	5.01**
Social A.	3.17	.69	3.22	.62	3.29	.72	3.25	.69	.97
Athletic C.	2.02	.57	2.17	.54	2.62	.61	2.76	.53	38.86***
Physical A.	2.33	.86	2.32	.82	2.34	.89	2.36	.81	.08
Behavioral C.	2.80	.64	2.81	.60	2.87	.70	2.94	.58	.73
Close F.	3.41	.70	3.44	.79	3.47	.76	3.33	.85	.28
Self-Worth	2.93	.68	2.94	.65	2.99	.71	3.09	.64	.71

*p<.05; **p<.01; ***p<.001

DISCUSSION AND CONCLUSIONS

For both genders, the results of the MANOVA indicate that there are large differences between the sedentary and the sport practice groups in Athletic Competence. Therefore, adolescents involved in moderate and high sport practice exhibit higher Athletic Competence than sedentary and low practice adolescents. These results are in accordance with previous research on physical self-perceptions (for a review on this theme see Fox, 1997). Adolescents also obtain other benefits from sport practice. Boys who practice sports present higher scores in Social Acceptance and Close Friendship than sedentary boys. However, girls who are highly involved in sport practice perceive themselves as more competent in school than sedentary, low and moderate practice sport girls. These findings suggest that boys and girls from 15 to 18 years-old obtain different benefits in self-concept from sport practice.

Comparing these results with our previous work with adolescents from 11 to 15 years-old, it is clear that adolescents of all ages who practice sport have higher Athletic Competence than sedentary adolescents (Balaguer, 1998). This is true for boys as well as for girls. Moreover, younger and older boys obtain benefits in social domains of self-concept from sport practice. Younger boys also benefit from sport practice in Physical Appearance. With regard to girls, younger active girls only get benefits in Athletic Competence, but older active girls also gain benefits in Academic Competence.

REFERENCES

Balaguer, I. (1998). **Self-concept, physical activity and health among adolescents**. 24th International Congress of Applied Psychology. San Francisco, USA.

Harter, S. (1988). **Manual for the Self-Perception Profile for Adolescents**. Denver: University of Denver.

Fox, K. R. (1997). **The physical self**. Champaign, IL: Human Kinetics.

Marsh, H.W., & Hattie, J. (1996). Theoretical perspectives on the structure of self-concept. In B.A. Bracken (Ed.), **Handbook of self-concept**. New York: Wiley.

Leith, L. M. (1994). Exercise and self-concept/self-esteem. In L.M. Leith (Ed.), **Foundations of exercise and mental health**. Morgantown, Wv: Fitness Information Technology.

SEASON OF BIRTH BIAS IN SPORT: THE ENGLISH FOOTBALL ASSOCIATION EXPERIENCE

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The selection of talented young athletes into elite squads leads to concern for the criteria whereby youth players are predicted to be future international level competitors. One view (most likely from coaches) would call for observable performance measures that simply identify highly skilled athletes at the time of selection. Alternatively, developmental scientists and talent development staff may argue that talent is very unstable, in that very young elite players do not necessarily demonstrate superior post-pubescent performance levels (Malina & Bouchard, 1991). The problem for adult leagues is the critical point for the 10 year rule of expertise development (Ericsson, Krampe & Tesch-Römer, 1993) that demands enriched opportunities for talented youngsters that will assist them to peak cognitively before decrements in physiological capabilities occur. Therefore, prediction needs a simple, plausible mechanism to consider biological development rather than chronological age in determining who will eventually perform at elite level.

The concern stems from the systematic variation in skill that is observed even within age-related bands of competition. That is, the range of talent within a cohort of young athletes tends to be chronologically biased in favour of the older members of the group (Brewer, Balsom & Davis, 1995). The origins of such an age effect are not clear, but one obvious explanation is simply the greater physiological development that the older athlete has achieved (Malina, Meleski & Shoup, 1982). Another argument (especially from education research - e.g., Sharp and Benefield, 1995), suggests that the additional cognitive development of the older child also contributes to the difference. This advantage takes two forms – the increase in reasoning and rational thinking capability that occurs in a year of growth and the learning that occurs through longer exposure to the motor and strategic demands of a sport (Thomas, Thomas & Gallagher, 1993). Sharp and Benefield and Smith and Smoll (1996) also suggest that the later born child may suffer self-perception difficulties as a result of lagging their peers in physical and cognitive capabilities. This further disadvantages them in being identified as a potential elite athlete.

This age bias is unique to age-banded performance domains. That is, as would be expected, the populations of all male births in England and Wales reflect unbiased monthly birth distributions, as do senior British football players at the international level (Brewer, et al., 1995). However, the pattern in 9 to 16 year old soccer players reflects a particular selection bias, with September to December births accounting for 50% of all competitors in youth teams. Further, statistics from 10,000 boys at Football Association Centres of Excellence illustrate that this effect increases in higher levels of competition. The 1996 records from Centres show that, of 803 boys registered at age 14, 59% were born between September and December against 41% in the other eight months. This trend to birthdate bias increases to 75% in later teenage elite squads (Brewer, et al., 1995).

This bias is not restricted to soccer. A review by Baxter-Jones and Helms (1994) claimed that young athletes in certain sports, whose birth dates fall during the early part of their sport's selection year, are more likely to be identified as 'talented' than those born later. The relationship between date of birth and sporting success, particularly in sports where advanced

physical development is advantageous, implied that the youngest children in any age grouping are at a considerable disadvantage. The belief, therefore, of Baxter-Jones and Helms was that the fault in selection lies in chronological age-banded training and selection procedures.

Overcoming age bias needs a simple set of procedures. Elaborate physiological and psychological tests for 9 to 16 year olds at regional competitions and trials will not work for logistical and ethical reasons. The Football Association National School introduced a simple Bio-Band procedure (Simmons, 1998) in the 1992 to 1997 selection process to address the age bias. This procedure seeks to match players in trials on physiological dimensions for selection trials. This should remove the impact of physical dominance by larger players (i.e., perhaps those that are oldest in the age-band) and allow such factors as technique and decision making to be observed. It was expected that the age related bias would not be so obvious in the athletes subsequently selected under this system. Furthermore, the trends in age-band bias would be monitored to explore changes through the School's program.

METHOD AND RESULTS

Archival data from 79 elite male soccer players resident at The Football Association National School was included. All subjects were in their 15th year at entry to the School, and the data represented five yearly intakes spanning 1992 to 1996. The subjects were identified as High (N=39) and Low (N=40) Bio-Band groups based on anthropometric measures.

Trials for selection at the School were conducted nationally involving 350 boys. All players were physically grouped by applying Bio-Band body mass criteria. Players were matched with their opposition in this way for physical equality in trial games. This process allowed 10 professional coaches from The Football Association National Coaching Department to select 16 players each year based on performance that is not influenced by significant physical miss-matching of opponents. One player in the five-year period could not be included in the analysis.

Mean Bio-Band values at the September start were significantly different (M High = 11.28; M Low = 9.87; $p < 0.001$). Mean Bio Band values at the August finish date of the program (i.e., one year later) were not significantly different ($\overline{M}$ High = 12.35; $\overline{M}$ Low = 11.80; $p > .05$). The mean age (months) at entry for the two groups was not different ($p > .05$). More interestingly, the subjects show an age bias in both groups, with September to December births accounting for 75 % of subjects, and January to August births 25 %.

DISCUSSION

There is a need to address the multidimensional nature of skilled performance when attempting to identify potentially elite players. Providing allowance for children born late in an age-band to produce performances that are comparable to those of older athletes in the group is essential to identify true talent.

Brewer, et al. (1995), feel that the selection of squads from a 6 month age band would almost certainly prove to be a better way of identifying talent amongst less physically mature players. They acknowledge that these squads may prove to be difficult to run on a practical basis and suggest a simpler alternative would be to base trials on 6-monthly age bands, allowing the

younger players within a one year group to perhaps compete against those of a closer biological age. Again, there are difficulties with this, and the FA National School has attempted a physical classification system to address age bias in selection procedures. This current study has retrospectively examined the outcome of that process. Certainly, the results suggest that physical dominance in selection trials has been addressed by allowing smaller players to compete with other Bio-Band matched athletes. This may have correctly identified some players who would not have been exposed to the enriched coaching provided at the school. The fact that there was no Bio-Band difference at the end of the program illustrates the unstable nature of adolescent development, and that small players at entry were most likely physiologically late developers who might never have been identified without Bio-Band matching being applied in the selection process. Interestingly, an age-bias was observed in both groups. This effect perhaps supports a cognitive advantage that is also available to older players – even at this relatively advanced developmental stage (Sharp & Benefield, 1995). That is, even when physical advantage is removed, the influence of, for example, heightened confidence, efficacy and self-perception may provide an edge to those older athletes who have become accustomed to dominance over younger players throughout their playing career.

REFERENCES

Baxter-Jones, A., & Helms, P. (1994). Born too late to win? **Nature, 370**, 186.

Brewer, J., Balsom, P. D., & Davis, J. A. (1995). Seasonal birth distribution amongst European soccer players. **Sports Exercise and Injury, 1**, 154-157.

Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. **Psychological Review, 100**, 363-406.

Malina, R. M., & Bouchard, C. (1991). **Growth, Maturation and Physical Activity.** Champaign IL: Human Kinetics.

Malina, R. M., Meleski, B. W., & Shoup, R. F. (1982). Anthropometric, body composition and maturity characteristics of selected school-age athletes. **Paediatric Clinics of North America, 29**, 1305-1323.

Sharp, C. M., & Benefield, P. (1995). **Research into season of birth and school achievement: A select annotated bibliography**. Slough: NFER.

Simmons, C. (1998). **The influence of differential changes in anthropometric body mass, physiological performance and age characteristics of a cohort of elite 14 and 15 year old soccer players at the FA National School**. Unpublished Masters Dissertation, Staffordshire University.

Smith, K., & Smoll, A. (1996). **Children in sport**. Boston: WCB McGraw-Hill.

Thomas, J. R., Thomas, K. T., & Gallagher, J. D. (1993). Developmental considerations in skill acquisition. In R. N. Singer, M. Murphey, & L. K. Tennant (Eds.), **Handbook of research on sport psychology** (pp. 73-105). New York: Macmillan.

SPORT AND EMPOWERMENT

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Key Words: Athletes with disabilities, empowerment, integration

INTRODUCTION

Disability sport has traditionally been founded in a rehabilitative philosophy. However, the goal of sport for individuals with disabilities is no longer only rehabilitation. It is, apart from being an ends itself, also empowerment (Sørensen, 1997).Thus, the focus of this study was to obtain a better understanding of how sport participation can be used as a tool to enhance empowerment on different levels.

The concept of empowerment is rooted in the "social action" ideology of the 1960s and the "self-help" perspectives of the 1970s (Kiefer, 1984, Rappaport, 1981). Empowerment means:

"That our aim should be to enhance the possibilities for people to control their own lives"
(Rappaport, 1981.p16)

And more precisely:
" Empowerment is the process by which individuals in a disadvantaged social group develop skills and abilities to gain control over their lives and to take action to improve their life situation"

Gutierrez (1990)

The ideology behind the empowerment concept implies that many competencies are already present or at least possible given niches and opportunities. That what is considered to be poor functioning is actually a result of social structure and lack of resources which make it possible for existing competencies to operate.

Hutzler (1990) introduced an integrative, phenomenological model of sports-based empowerment. This model advocates that empowerment is closely related to concepts like self-efficacy and perceived competence. The goal is that the individual, through the sport experience, acquires control over personal and environmental resources in order to provide competencies usually deprived through disability and handicap. It is important to note that the effects of empowerment can occur at various levels; - personal, group and society level (Hartstock, 1983).

The way sport participation can enhance empowerment on a personal level is through i.e. skill development and improved functionality (Sørensen, 1998). On a group level, sport may be important because the participants strive towards similar goals and develop a positive group identity (Fasting, 1998). And finally, on a societal level, sport participation may elevate the status of athletes with disability in society because they (as a group) are shown in a different light, and acquire political power (Høegh, |994). Thus, the aim of our study was to obtain a deeper understanding of this phenomenon

METHOD AND PROCEDURE

A partly orientational qualitative inquiry approach was used in this study (Kvale, 1996). This implies that we had an explicit theoretical perspective when we developed the interview guide although we started out every theme very open. Thus, the empowerment perspective adopted in this study determined the variables and concepts focused upon, and it also guided our interpretation. We chose an orientational perspective because we wanted to get a deeper and more comprehensive understanding of empowerment as a concept for these individuals.

The interview guide developed for this study covered three main topics, namely; a) the importance and meaning of sport; b) the empowerment concept; and c) experiences of empowerment related to integration.. This paper particularly focus on part b).

Five athletes (four men and one woman) with considerable experiences from both high level sport and on the exercise level were asked to take part in this study. The reason why these particular athletes were asked to take part was first because they exhibited substantial experiences in sport; secondly they represented different types of disabilities (one blind, one visually impaired, one with polio, one with cerebral palsy and one amputee); and third they had experience from different degrees of integration into ordinary sport. The interviews lasted from about 1hr – 2hrs. All interview's were transcribed by the first author and then returned to the informants for comments and corrections. Follow-up interviews were conducted, but they will not be reported in this paper.

RESULTS AND DISCUSSION

The transcribed interviews were analysed by both authors separately, and then compared and discussed. Concerning how sport participation effects empowerment on a personal, group and societal level the following came up:

On a personal level:
"... First of all I would like to say that sport has – especially after the accident – been a major part of my life and a very important tool, for my own mastery and understanding, really, and beyond the pleasure of just running faster or jumping higher. It means that you are in an area where you receive response on your actions".

Another informant said the following:
" ... And then [when you do sport] they [people in general]suddenly see you not only as the disabled girl, but then you become a girl who is doing archery, and that is quite a big difference".

On a group level:
"...It [the sport participation] was something that brought us very close.[....] It was very important to me socially. The experiences we shared, everything we did when we were travelling as a team".

Another informant said the following:
" ...It was the case of being together with other persons with disabilities, that was important"

On a societal level:

"...I believe that it is on the macro level that disability sport has played an important role when it comes to changing the attitudes to persons with disabilities that started in the sixties. [....] It created a recognition and acceptance for that also people with different disabilities expressed demands and rights in Society, and that they were able to manage things on their own and to look after themselves and express their own needs.....]

It is evident from the interview's that sport participation is used as a tool to enhance empowerment on all levels, although this is not always expressed explicitly. As we can see on the societal level, sport participation also influence the forming of a persons self identity, which is discussed in more detail elsewhere (Sørensen & Pensgaard, 1999).

The most common use of the term empowerment has, as Wallerstein (1992) points out, focused only on one level, that of individual change. However, a study of empowerment implies not only studying individual change, but also change in the social setting itself. The results from this study demonstrates the importance of including all three levels of empowerment. This is underlined by two of the informants who explicitly says that participating in sport both on an active, but also on an organisational level have been of major importance for both their individual (i.e. mastery) and their societal (i.e. recognition) empowerment. However, we should not take for granted that sport participation always foster empowerment experiences. Søder (1997) for example claims that it is only young strong men with disabilities who will become empowered, while other and "weaker" groups of people with disabilities will suffer because for them, sport as empowerment is not an option.

The focus of future studies should be to examine further the relationship between perceptions of empowerment on different levels, both as an outcome and as a process, and the experience of sport participation among athletes with disabilities..

REFERENCES

Fasting, K. (1998). Links between physical activity and social empowerment of women. **Paper presented at Regional Seminar on Women in Sport for European National Olympic Committees, 9-10.September**, Zagreb, Croatia.

Gutierrez, L.M. (1990). Working with women of colour: An empowerment perspective. **Social Work, 35**, 149-153.

Hartsock, N.C.M. (1983). **Money, sex and power: Toward a feminist historical materialism**. New York, Longman.

Hutzler, Y. (1990). The concept of empowerment in rehabilitative sports. In G.Doll-Tepper, C. Dahms, B.Doll & H.v. Selzam (eds). **Adapted Physical Activity** pp. 43-51, Springer-Verlag, Berlin.

Høegh, H. (1994). Integration viewed from an international perspective. **Paper presented on the 2nd Paralympic Congress**, March, Lillehammer, Norway

Kvale, S. (1996). **InterViews: An introduction to qualitative research interviewing**. SAGE Publications, CA.

Rappaport, J. (1981). In praise of paradox: a social policy of empowerment over prevention. **American Journal of Community Psychology, 9** (1): 1-25.

Søder, M. (1994). **Empowerment, rehabilitation or freak show? Sports for the disabled and the socialization of young people with disabilities**. Paper presented on International Symposium on Adapted Physical Activity, Oslo, June.

Sørensen, M. (in press). Sport and exercise for individuals with disabilities: psychological aspects. **Revista de Psichologia del Deporte**.

Sørensen, M. (1998)

Sørensen, M. & Pensgaard, A.M. (1999). Sport and identity formation for individuals with a disability. **Paper presented at the 10th European Congress in Sport Psychology**, Prague, Czech Republic.

Wallerstein, N. (1992). Powerlessness, empowerment and health: Implications for health promotion programs. **American Journal of Health Promotion, 6(3),** 197-205.

GROUNDED THEORY APPROACH TOWARDS TALENT SELECTION - ICE HOCKEY

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KEY WORDS
Talent selection, Grounded theory, Ice Hockey

INTRODUCTION
Setting the criteria of talent assessment in particular sports branches is an inclusive part of sports training theory. Regarding the great financial amounts spent on the top athletes, there is a pressure upon the responsible persons involved on all system levels to be likely to reach the top performance level. As a sports training preparation is a long-term process, where the bases of future efficiency are developed since the childhood, it is undoubtedly of help if the individual perspectives are recognized as soon as possible.

PROJECT GOALS
The project objectives are to be found in two areas.
The first objective is to find out and give an appropriate explanation of what sort of a player is understood to be the „talented" one in ice-hockey, and how the talent search process in this sports branch is carried out.
The second objective is to verify the qualitative research possibilities (Glaser - Strauss 1967) in this field.

RESULTS
Carrying out the research project, three individual and one group interview were held. Experts chosen for this interview have a broad knowledge and practical experience in searching for talents in ice hockey. They were informed of the main topics in advance. The main categories involve the following issues: talent and its content, talent search, forming a team, types of a player, defenders - talented players inter-relation.

What does a talent represent
All known definitions of abilities and skills determining this term are quite complicated to formulate, but they may be summarized into three basic areas, mentioned by all the experts: **a sense of game**, **psychic resistance** and **diligence**.
With respect to the notion we had, the first two categories were expected (sense of game and psychic resistance), the third category (diligence) was not considered so relevant from the preparation viewpoint. Surprisingly, all the specialists considered diligence a fundamental principle of all-further effort and performance. Players assessed as talented also usually play a role of team leaders, however, this feature is considered more or less secondary. The primary part is played by skills that imply the team leader role. Another fact of a great importance is a chance to be given an opportunity, where coincidence plays its role.
Some experts' opinions on the matter imply that talent cannot be considered in general, but there are several „groups" or „levels" of a talent ranging from „super-talents", great talents to small talents that may be exceptional just on the level of regional junior teams.

Sense of Play. The definition remains uncertain and is understood as a sum of basic activities in a play, that are usually shown in three areas: **a)** quality of individual attacking activities **b)** perception and anticipation, creativity **c)** quality of situation solving.

Psychical Resistance. The experts proclaim that players assessed as talented usually let themselves shown, even in situation the team loses. Not being amenable to a failure, they are able to take the responsibility in key moments of a match - and this is the feature of the greatest importance (not to be amenable to a failure), and, therefore it is considered as one of the most influencing factors.

Diligence. Even though it is not directly connected to a talent selection or playing activities of a player, diligence is stated as one of the basic attributes of a success. The inner motivation is of a great importance in this area (to be the best, to carry through), as well as the outer motivation (stress and pressure from outside, parents, scouts).

How the talented players are selected

The selection of players is carried out on the basis of multiple selections that begin with a selection of a player for a regional league. A team of experts that assess the player's qualities consequently observes the regional league players.

The preliminary standpoint is knowledge of a player based on a coach's recommendation and long-term statistics. Another important factor that plays a significant role is a talented player's ability "to make himself seen". This ability is based on the quality of given activities, such as especially skating, covering the ice rink and individual playing activities, and must be repeatedly proved.

Difference Between Searching for Talents and Making-up the Team

All the experts involved agreed on the necessity to separate a talent search process from making-up a team, stating that a team must involve all "types" of players, not just the "talented ones". The types are usually described as follows: finishmen ("shooters"), play makers ("conductors"), fighters ("workers"), destruction players ("crackers").

Shooters. They can be characterized by a high ability to score a goal, high first strides dynamics during the start, allowing for fast breaks finished with successful shots. Within a team they usually assume a special position of "an untouchable player". They do not display a remarkable devotion or fighting spirit in the defensive phase of the game, however it is compensated with a high efficiency in offence.

Conductors. They can be usually characterized by a lesser quality of skating skills, but on the other hand a top puck leading and passing. They display the best peripheral sight and an ability of situation analyzing and solving, and in the way indicated, they create and conduct collaboration of the whole line-up in either offence or defence. As seen from the team viewpoint, they usually show high self-confidence (belong to the team leaders) and hardly ever get involved in defence (especially as far as man-to-man defence is concerned).

Workers. The characteristic features of these players are a high level of industriousness, physical condition readiness and reliability. They correct the mistakes of others and are highly responsible. They are not the playmakers, as they possess neither creative abilities nor playing activities of an individual on the required level. Nevertheless they are able to keep the tactical instructions of their coaches.

Crackers. They are usually special types of workers whose characteristic feature is a simple destructive play based on personal tackles. Sometimes they may be assigned special „tactical" tasks - e.g. raise a fight, etc.

The Problem of Talents and Backs

All experts, who mentioned the selection of talents, described the talented players in accordance with the offensive activities. When they were asked to identify significant talents, they mentioned the forwards. And when they were put the question about the relation of the talent and the defence play some of them stated that the backs were not real talents. The talent is usually manifested by the play in offence. When they were to identify talented backs and their performance, they mentioned skating and offensive abilities in the first place (i.e. starting the game, shooting at the goal).

DISCUSSION AND CONCLUSIONS

One of the expected results was the process by stages as far as the choice of talents is concerned. It is however due to the existing system and the necessity to separate the choice of players and the formation of the team. The most important thing for the selection of players is that they „must be seen". We may conclude that there is „something" (which is difficult to define) what differentiates the talented players from the untalented ones at first sight. The experts called this „something" „the ability to play, to be able to play" which is „seen at the first sight".

The main characteristic features of the talented players were an interesting topic. The feeling for the play, which is mentioned as a basic thing (under various similar names), is certainly known by all coaches in this category. The problem of industriousness seems to be rather surprising. Single experts do not understand the term talent just from the point of view of sports activities, they lay more emphasis on endurance, will and interest.

The problem of the talented player's assertion was also surprising. The experts stated it was necessary to be given a chance. There are a lot of questions connected with it - e.g. how many really talented players are there in the drafts and how many did not get the chance just because they came from a little town, etc.

The type differentiation of players, who form the team, is also known. The characteristic features of individual types and the appearance of the type 4 („cracker") that has not been described in literature are rather unusual.

To finish our discussion we would like to pay more attention to the backs. When the experts mentioned talented players, they always spoke about forwards and their performance. In most answers the backs were described as less talented. They are not real talents but hardworking players. There were even answers saying that a talented player is a forward and the other way round. If we accepted this statement, it would take a new turn in the choice of talents.

This work has shown the possibilities of a further qualitative research as a scientific method, which enables to find new data. The formation of categories in the field of talent selection showed the wide range of problems that are included in this area. There are new prerequisites for a further research into the above mentioned categories.

REFERENCES

Aule, R. Loko, J. (1983) Selection of young athletes. **Mod. Athl. Coach,** 21, 3-6.

Glaser, B. - Strauss, A.: (1967). **The Discovery of Grounded Theory: Strategies for Qualitative Research**, Chicago, Aldine.

Kostka, V. - Wohl, P. et all. (1979). **The training of youth ice hockey players**. Prague, Olympia.

CONSTRAINING CLIMBING MOVEMENTS BY 'STATE VARIABLES'

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KEYWORDS ecological psychology, affordances, state variables, nervousness, climbing

INTRODUCTION

One of the key notions of ecological psychology is that to perform actions, whether it be climbing a wall or crossing a busy street, one must perceive affordances, that is, relevant properties of the environment that support actions (Gibson, 1979/1986). Affordances refer to both the environment *and* the actor. What is striking in the affordance research is that it has primarily focused on 'physical' relationships between actor and environment, for example, the lawful relationship between leg length and maximal step height in stair climbing.

Only recently, however, some attempts have been made to address the influence of so-called state variables—such as nervousness or fatigue—on the perception of affordances (e.g., Bootsma, Bakker, van Snippenburg, & Tdlohreg, 1992; Pijpers & Bakker, 1995). For instance, due to fatigue a different fit between actor and environment seems to emerge: the perceived reachability of a hold on a climbing wall changes when one becomes fatigued (Pijpers, Bakker, & Holsheimer, 1997). Apparently, participants are sensitive to the changing *fit* between themselves and their environment which would probably affect motor behavior.

Manipulating nervousness by bringing participants in threatening and non-threatening situations, Pijpers and Bakker (1995) found that participants underestimated their maximum reaching distance on a climbing wall when experiencing nervousness. Thus, nervousness might influence the perception of the affordance 'reachability of a hold'. However, it remains to be seen *whether* and *how* this change in perception reveals itself in the actor's motor behavior. The present study, which forms part of a series of experiments, is aimed to explore these two questions.

METHOD AND PROCEDURE

Participants

Nine male participants without climbing experience (aged 19 to 27 years) participated in the experiment.

Apparatus

Participants climbed on a vertical climbing wall (3.5 m wide, 7.0 m high) placed in a large experimentation room. On the wall, two identical, horizontal routes ('traverses') were mounted each consisting of 11 holds (6 handholds and 5 footholds) of varying size and shape, all suitable for novice climbers. The mean height of the five footholds was 0.3 m in the low traverse and 5.1 m in the high traverse. In the high condition participants stepped onto the wall from an elevated movable platform. All participants wore well fitting climbing shoes (Enduro 954, La Sportiva). In both conditions, a standard protection technique was used to secure participants' safety.

Each hold was connected with a computer via on/off switches (threshold: 2-5 N). Pressure from the participant's foot or hand activated a signal to the computer. Releasing pressure on the hold resulted in deactivation of the switch. This equipment made it possible to determine the contact time between a hand and a hold and between a foot and a hold. Consequently, the time participants moved from one hold to the other could also be calculated, but only if each hold was

activated by only one hand or foot at the same time. At present, only the movement times of the feet could be calculated. All climbs were videotaped (at 50 Hz).

Procedure

Participants were tested individually. After signing an informed consent form participants changed into sportswear and climbing shoes and practiced the (low) traverse until they were able to execute the required climbing task without falling. When participants were recuperated, they had to climb the route four times in either the high or the low condition. The order of high and low conditions was reversed with every new subject. Participants started on the right side of the wall, went to the left, came back to the right, went to the left, and, came back to the right again (4 traverses in total). The start of a traverse was defined by the release of one of the first four holds (two handholds and two footholds).

After a recuperation time of one hour the procedure was repeated, but now participants climbed in the other condition (high if they had started low; low if they had started high). Five participants started in the high condition, and four in the low condition.

Before and after climbing in each condition, nervousness was evaluated by asking participants to fill in the 'anxiety thermometer' (Houtman & Bakker, 1989), a continuous scale on which respondents are asked to rate their feelings of nervousness, ranging from "not nervous at all" (0) to "extremely nervous" (10). The mean of the two nervousness scores in each condition was used as the nervousness score for that condition. During climbing mean heart rate values were recorded every 5 seconds using a Sporttester (Polar Electro-3000). For every climb the mean heart rate was calculated.

RESULTS

Mean differences in the anxiety thermometer scores and heart rates were examined using paired *t*-tests. Participants were significantly more nervous in the high condition (mean score = 4.0, SD = 1.57) than in the low condition (mean score = 2.4, SD = 1.57), $t(8) = -3.44$, $p = .009$. The mean heart rate (beats/min) was significantly higher in the high (146.7, SD = 12.79) than in the low condition (120.9, SD = 16.05), $t(8) = -6.56$, $p < .001$.

Table 1 shows the means and standard deviations of the total climbing time (defined by the total time participants needed to climb four traverses), foot displacement time (defined by the total duration of the foot displacements), number of hand and number of foot movements (one movement is defined by a displacement of a hand or a foot from one hold to another, or to the same hold).

Paired *t*-tests showed significant effects for Total Climbing Time, $t(8) = -3.53$, $p = .008$, and Foot Displacement Time, $t(8) = -2.70$, $p = .027$. As shown in Table 1, participants climbed longer in the high condition compared to the low condition. Also, in the high condition it took more time

TABLE 1

Means (and Standard Deviations) of Total Climbing Time (s), Foot Displacement Time (s), Number of Hand Movements, Number of Foot Movements in the Low and High Condition

	Low Condition	**High Condition**
Total Climbing Time	60.9 (10.99)	77.4 (9.36)
Foot Displacement Time	19.7 (3.02)	23.1 (3.13)
Number of Foot Movements	21.2 (3.19)	22.6 (2.51)
Number of Hand Movements	26.8 (2.59)	26.3 (2.35)