

## Questionnaire

The pre-, post-workshop and two follow-up questionnaires (2 months and 6 months) contained 7 questions: 3 items on perceived knowledge (of definition, purpose and implementation), 2 items on the importance of imagery (in training and in competition), and 3 items on use (by coach, by athletes by coach with athletes). Ratings of all items were made on a 6-point scale with anchors of 'very low' and 'very high'. Total item scores provided indices of perceived knowledge, importance and use of imagery at each of the 4 time points. The coaches' experience at national level and the number and length of meetings with the squad were also recorded before the workshop.

## Imagery Workshop

The workshop consisted of a 1 hour and a half presentation and 2 hour group work. Material included was based on the recommendations of Vealey and Walter (1993). Emphasis was placed on understanding the definition of imagery and its influence on performance, the steps for practising imagery (developing sensory awareness, clarity, controllability, and the use of internal images), the stages of sport imagery training (guided practice, self-directed imagery, using imagery in training, and in competition), and several imagery guidelines (e.g. use short imagery sessions, image with all the senses).

## RESULTS

A repeated-measures MANOVA was used to detect whether significant differences occurred over time for each imagery dimension. The results indicated that significant differences emerged between the 3 time evaluations of the imagery ratings,  $F=4.93$ ,  $p<.05$  (see Table 1). Univariate analyses revealed a significant time effect on imagery knowledge  $F=6.79$ ,  $p<.05$ , and imagery use  $F=3.47$ ,  $p<.05$ . For the importance of imagery ratings only a trend emerged  $F=3.47$ ,  $p=.056$ , hence no further analyses were conducted.

TABLE 1. Means for Imagery Knowledge, Importance and Use

	<u>Knowledge</u>		<u>Importance</u>		<u>Use</u>	
	Means	SD	Mean	SD	Mean	SD
Pre-workshop	9.72	4.18	8.88	2.69	8.64	2.68
Post-workshop	13.37	2.58	10.04	1.49	13.04	2.34
2-month follow-up	13.11	2.35	10.05	1.51	9.47	2.45
6-month follow-up						

Follow-up tests showed significant differences in perceived knowledge between pre and post-workshop and between pre-workshop and 2-month follow-up. Significant differences were also found between pre- and post-workshop, and between post-workshop and 2-month follow-up for the use of imagery ratings. No other significant differences were found.

## DISCUSSION AND CONCLUSIONS

The results of this study showed that coaches' perceived knowledge of imagery has improved significantly after the workshop and remained unchanged 2 months later when compared to their pre-workshop assessment. It was encouraging to find no significant decrease in knowledge 2 months after the workshop. The newly acquired knowledge seemed to have inspired optimism in the coaches' future use of imagery. This was reflected in a significant increase in intended use compared to the actual imagery use before the workshop. The positive effect however, dissipated rapidly, with imagery use 2 months after the workshop being significantly reduced compared to post-workshop plans. The 2-month rating of imagery use was still higher than the pre-workshop evaluation. This small increase in imagery use following the workshop could be explained by the low frequency of scheduled meetings with athletes reported by some coaches (i.e. 1-2 per month) and hence little opportunity for implementation. Given more time (i.e. 6 months follow-up) it may be possible to see intention converted into action.

The workshop appears to have had greater impact on coaches perceived knowledge, importance and use of imagery from the pre- to post-workshop evaluation. This supports findings by Gould et al. (1990). The increases in knowledge and importance remained stable over time whereas the use ratings decreased. Gould et al. explained this undesirable time effect on use in terms of lack of support system to help athletes with implementation of mental skills. They recommended that the coach, identified as the main support provider, should be involved in educational workshops with their athletes. However, bringing the coaches and athletes together was not possible in this study given the variety of sports represented. An educational workshop for coaches is a step in the right direction and it is hoped that the information provided would have improved coaches confidence in implementing imagery training programs with their athletes.

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## **WITHIN-TEAM VARIATION IN PERCEPTIONS OF THE MOTIVATIONAL CLIMATE AND ITS PREDICTORS**

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**KEY WORDS:** Motivational Climate, Goal Orientations, Individual and Team Variation

### **INTRODUCTION**

Consistent with the work of Ames (1992) in the academic domain, sport research has demonstrated that perceptions of the motivational climate operating on teams can be measured and that these perceptions hold significance for understanding differences in athletes' cognitions, beliefs, emotional responses, and reported behaviors (see Duda & Whitehead, 1998, for a review). Although athletes respond to assessments of their views regarding the prevailing motivational atmosphere on particular teams, we have generally examined the correlates of perceived situationally-emphasized goals in sport across individuals rather than within groups (Seifriz, Duda, & Chi, 1992). Further, when researchers report specific variables which have been found to be tied to perceptions of a task- and/or ego-involving sport climate, there is an implication that these perceptions are consistent within the groups (i.e., teams) sampled. From both a theoretical and applied standpoint, it is important to ascertain whether such judgments are generally shared among athletes participating on individual teams.

The purpose of this study was twofold: (1) to examine the degree of within-team variability in perceptions of the motivational climate across a large sample of sport teams, and (2) examine, in an exploratory manner, individual (such as players' age, goal orientations, and contentment with their team as a whole) and team-related factors (namely, team size) which predict such within-team variability.

### **METHOD AND PROCEDURE**

#### **Sample**

The participants in this study were 385 female volleyball players recruited from 46 teams participating in a national junior volleyball competition in the U.S. The players were between 14 - 18 years of age.

#### **Procedure**

The athletes voluntarily filled out a multi-section inventory in small groups in a dining area at the tournament site. The inventory was administered by the second author and it took the athletes approximately 20 minutes to complete the instrument. The volleyball players were requested to answer honestly and were assured that their responses would be kept confidential.

#### **Instruments**

**Perceived motivational climate.** The athletes' perceptions of the atmosphere prevailing on their team were assessed via the 29-item Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Newton, 1994; Newton & Duda, 1993). When completing the PMCSQ-2, the volleyball players were requested to think of what the environment (created by the coaches) is generally like and then indicate their degree of agreement with each statement on a 5-point Likert-type scale (1="strongly disagree," 5="strongly agree"). The two major dimensions of the PMCSQ-2 were found to be internally consistent ( $\alpha = .83 - .87$ ).

**Goal orientations.** Individual differences in the proneness for task and ego involvement in sport were assessed via the 13-item Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda, 1989). The TEOSQ was completed specific to the sport of volleyball and responses were

indicated on a 5-point Likert-type scale (1="strongly disagree," 5="strongly agree"). Both the task and ego orientation scales were internally reliable ( $\alpha = .81$  and  $.86$ , respectively).

**Team satisfaction.** A four item measure of the volleyball players' satisfaction with being a member of their respective teams was administered (Walling, Duda, & Chi, 1993). An exemplary item is "I enjoy playing on this team." Responses were indicated on a 5-point Likert-type scale (1="strongly disagree," 5="strongly agree"). This scale exhibited acceptable internal reliability ( $\alpha = .87$ ).

## RESULTS

With respect to examining a volleyball team's degree of consistency (among its own team members), we recognized that the SD across teams would be unstable due to the small and unequal within-team sample sizes. In this study, team sample sizes ranged from 5 to 12 volleyball players. Thus, we first assumed that the spread of team climate scores (i.e., the lack of consistency among members of each team) was due to true discrepancy among athletes' perceptions of the motivational atmosphere. Examining a 95% confidence interval of task and ego climate scores across all 46 teams showed some teams had larger 95% CI than others and, thus, indicated a lack of consistency in the former.

In order to "standardize" the SD, a coefficient of variation (CV) was determined which expresses the standard deviation (SD) as a percentage of the mean value. Calculation of the CV allows for the comparison of variability of a particular value within a group across groups. The CV equals 100% if the SD equals the mean. CVs for both the task and ego climate scores were calculated for each team. They ranged from 5 to 29% for the task climate dimension and 8 to 49% for the ego climate dimension among the 46 teams. On average, volleyball players disagreed more regarding their perceptions of the ego-involving features of the team climate (average CV = 20%) than in the case of their views on the task-involving facets of the team environment (average CV = 10%).

To determine whether athletes' views concerning the emphasis placed on task and ego goals by their coaches corresponded to observed within-team variability, the 45 teams were divided into two groups: Group One, comprised of those teams with a SD less than the observed mean group SD, and Group Two, comprised of those teams with a SD greater than the observed mean group SD. Independent t-tests indicating that Group One exhibited higher scores on the task ( $M = 4.23$ ) and ego ( $M = 2.75$ ) climate scales than Group Two ( $M = 3.93$  and  $2.47$ , respectively).

Logistical multiple regression analysis (on a 2-level coefficient of variation) was employed to examine the degree to which athlete characteristics (i.e., players' age, task orientation, ego orientation, satisfaction with one's team) and team size predicted the extent to which the within-team individual scores varied from the team mean scores (for the task climate and ego climate dimensions) across the 46 teams. Within-team variability in perceived task-involving features of a team environment was related to the age of the players ( $B = .25$ ,  $p < .004$ ) and team satisfaction ( $B = -.45$ ,  $p < .001$ ). Volleyball players who reported greater satisfaction with their team played on teams which exhibited less variability in perceptions of the task-involving features of the team climate. Greater within-team variability in task climate scores, however, emerged in the case of the older athletes.

Within-team variability in perceived ego-involving aspects of a team environment was significantly predicted by age ( $B = .30$ ,  $p < .001$ ), athletes' degree of task orientation ( $B = .78$ ,  $p < .001$ ), and players' reported satisfaction with their team ( $B = .26$ ,  $p < .05$ ). Greater within-team variability in perceptions of an ego-involved motivational climate was exhibited by teams comprised of players who were older, more satisfied with their team, and more task-oriented.

## DISCUSSION AND CONCLUSIONS

The results of this study indicate that there can be considerable within-team variability in the perceived motivational climate and that this inconsistency is more apparent in terms of the ego-involving dimension. Moreover, when the situationally-emphasized goal perspective is deemed more pronounced by athletes (i.e., higher in its task- and/or ego-involving features), there appears to be less variability in how players within each team view the motivational climate operating on their team.

Present findings suggest that, as athletes get older, greater discrepancy exists in how they perceive the overriding motivational atmosphere on their team (with respect to its task- and ego-involving elements). Based on the current research, we cannot ascertain whether this is truly an age-related difference or whether the observed age effect was due to some cognitive/social developmental factor, an extraneous psychological characteristic linked to age, or variability in experience (with the coach or sport) between the younger and older volleyball players sampled. We also found that, when athletes are more satisfied with their team as whole, there is less divergence in how they view the motivational climate in regard to its task- and ego-involving attributes. With correlational data, we cannot discern whether the players' contentment emanates from this shared perception or whether the consistency in views about the team atmosphere promotes greater satisfaction with one's team.

Although in cross-sectional studies there is typically a low to moderate correlation between the task and ego scales of measures of goal orientations and their respective scales on assessments of the perceived motivational climate (Duda & Whitehead, 1998), the volleyball players' degree of task orientation did not predict the extent to which players on a team were harmonious regarding the perceived task-involving features of the team environment. The same held for the potential link between ego orientation and within-team variability in ego climate scores. However, when the volleyball players were stronger in task orientation, there was greater consistency in how ego-involving they saw their team environment to be.

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## **THE PERCEIVED MOTIVATIONAL CLIMATE AND PSYCHOLOGICAL WELL-BEING AMONG SPANISH ARTISTIC GYMNASTS**

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**KEY WORDS:** Motivational Climate, Gymnastics, Self Esteem, Body Image, Anxiety

### **INTRODUCTION**

Recent work on goal perspectives has begun to examine the health-related implications of an emphasis on task- and/or ego-involved goals (Duda, 1996). With this research direction in mind, Duda and Benardot (1995, 1998) examined the relationship of perceptions of the motivational climate operating in the training gym (i.e., the degree to which this environment is more or less task- and ego-involving) to psychological precursors to the development of eating disorders among elite female artistic gymnasts. They found that gyms which were more task-involving and less ego-involving had gymnasts who reported higher self esteem, a more positive body image, and greater intrinsic enjoyment. Perceptions of an ego-involving gym climate were linked to a higher frequency of competition-related worry. In a follow-up investigation (Duda & Kim, 1997), perceptions of the motivational climate surrounding female artistic gymnasts were once again found to predict the psychological correlates of disordered eating patterns as well as negative attitudes toward eating and preoccupations with food.

The purpose of this study was to examine whether the Duda and Benardot (1995, 1998) findings could be replicated in a different cultural context. Specifically, we determined the relationship of the perceived motivational climate operating in gyms to indices of psychological health (i.e., self esteem, body image, enjoyment, and degree of worry) among Spanish female athletes involved in high-level artistic gymnastics.

### **METHOD AND PROCEDURE**

#### Sample

The participants in this study were 269 female artistic gymnasts. Their mean age was  $11.39 \pm 2.6$  years.

#### Procedure

In formulating the sample for this study, a list of gyms from different areas in Spain that included high level gymnasts was generated. The gymnasts voluntarily filled out a multi-section inventory in small groups in the gym where they trained. The inventory was administered by the second author and it took the gymnasts approximately 40 minutes to complete the instrument. The gymnasts were requested to answer honestly and were assured that their responses would be kept confidential.

#### Instruments

Perceived motivational climate. The gymnasts' perceptions of the atmosphere prevailing in their gym were assessed via an abbreviated version of the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Newton & Duda, 1993; Seifriz, Duda & Chi, 1992). Due to the age of this group of athletes (and overall length of the multi-part inventory), 14 items from the original PMCSQ-2 which have been found in previous work to have the highest loadings on the task-involving and ego involving dimensions, respectively, were employed in this study. When completing this 14-item PMCSQ, the gymnasts were requested to think of what the environment (created by the coaches) is generally like in their gym and then indicate their degree of

agreement with each statement on a 5-point Likert-type scale (1="strongly disagree," 5="strongly agree"). A mean scale score was calculated for each of the climate dimensions.

Self esteem. The gymnasts completed the 6 item General Self Worth subscale of Harter's (1982) Perceived Competence Scale for Children. Possible scores ranged from 6 through 24 with a higher total score reflecting a more positive self-esteem.

Body Image. To assess their overall affective evaluation of their bodies, the gymnasts responded to an abbreviated 16-item version of the 24-item Body Esteem Scale which was developed for children and adolescents (Mendelson & White, 1982). The response options were either "yes" or "no" with a higher score reflecting a more positive body image.

Enjoyment. Pulling from the work of Scanlan and Lewthwaite (1984), four items were used to determine the gymnasts' degree of enjoyment experienced in their sport (e.g., How much did you enjoy doing gymnastic this year?). Responses were indicated on a 5-point Likert-type scale (1="not at all" and 5="very much so").

Competitive Anxieties. The gymnasts responded to 12 items (adapted from Gould, Horn, & Spreeman, 1983, and Weiss, Weise, & Klint, 1989) which tapped how much they think about various sources of competition and performance-related worries before gymnastics meets (e.g., "I worry about not remembering my routines,, "I worry about not performing well"). Responses were indicated on a 5-point Likert-type scale (1="Never," 5="Very Often"). Similar to what was observed in the Duda and Benardot (1998) study, factor analysis of the 12 items resulted in three interpretable factors, namely Fear of Failure, Concerns about Outcome, and Concerns about Preparation.

## RESULTS

### Validity and Reliability of the Measures

Cronbach alpha coefficients were calculated for each of the measures used in this study. The two scales of the PMCSQ-2 (i.e., Ego Climate,  $\alpha = .71$ , Task Climate,  $\alpha = .75$ ) and assessments of self-esteem ( $\alpha = .73$ ), body image ( $\alpha = .83$ ), and enjoyment ( $\alpha = .72$ ) all demonstrated acceptable internal consistency. The observed alpha for the three worry dimensions ranged from .64 to .76.

### Perceptions of the Motivational Climate and Indices of Psychological Well-being

The gymnasts found their gyms to be more task-involving ( $M = 4.2$ ) than ego-involving ( $M = 2.77$ ). Simple correlations (Table 1) were first calculated to examine the relationship of perceptions of the motivational climate in the gym to the selected self perceptions and affective responses. A perceived task climate was significantly and positively associated with self-esteem, body image, and reported enjoyment of gymnastics. In contrast, negative correlations between perceptions of an ego-involving gym environment and these three variables emerged. Further, when the gymnasts deemed their gyms more ego-involving, they were significantly more likely to exhibit greater concerns about the competitive outcome and be more fearful of failing.

**TABLE 1. Simple correlations.**

	Task Climate	Ego Climate
Self Esteem	.20**	-.16**
Body Image	.20**	-.25**
Enjoyment	.12*	-.28**
Fear of Failure	.09	.16**
Concerns about Outcome	.11	.21**
Concerns about Preparation	-.01	.11

NOTE: \*  $p < .05$ , \*\*  $p < .01$

Multiple regression analyses, with perceptions of a task- and ego-involving climate as independent variables, were conducted. Task climate emerged as a positive predictor and ego climate a negative predictor of body image, self esteem, and enjoyment ( $R^2 = .09$ -.12). Perceptions of an ego-involving environment were significantly related to the amount of worry associated with competitive outcomes ( $R^2 = .10$ ).

### DISCUSSION AND CONCLUSIONS

Although the observed relationships were not strong, the present results are consonant with those reported in past work (Duda & Benardot, 1995, 1998; Duda & Kim, 1997). In general, the findings indicate that perceptions of the perceived situationally-emphasized goal perspectives in gymnastics clubs corresponds to indices of current psychological well-being (and, thus, potentially long-term health) among Spanish gymnasts. It is suggested that the consideration of individual differences in goal orientations, and their interaction with the perceived climate, might enhance the prediction of such critical self-perceptions and affective responses in this demanding sport context.

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## **The Role of Parents and Coaches in the Transition of Youth in Sports.**

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Key-Words: parents, coach, youth sports, transitions

### **INTRODUCTION**

Smith, Smoll, and Smith (1989) have provided us with a model of the key players in the development of youth in sport. The "athletic triangle" is composed of the athlete, the coach, and the parents. These individuals interact with the athlete in varying roles and for varying amounts of time. In the United States the roles may even overlap. For example, the coach of a youth sport team may be a parent of one of the athletes on the team. For these children, the roles become blurred and the athlete may feel tension when the parent is critical of her/him during practices or games. Athletes may feel that this "public" criticism undermines the relationship they have with the parent/coach, who previously was their strongest supporter. The purpose of this paper is to discuss the issues, responsibilities, and concerns of parents and coaches at critical transition stages of youth in sports.

### **METHOD AND PROCEDURE**

Data for this presentation were provided by two studies. The transition of youth into sport begins early in life. Often parents provide encouragement of their children to participate in sport through the toys they buy and the activities that they engage in with their children. Typically, parents will provide early instruction in the sport in which they participate or have participated in. Thus, the transition into sport begins before the child is actively involved in the decisions about participation in sport. In a first study, parents of youth sport tennis players, who were ranked in the United States Tennis Association, were interviewed. These youth, ages 10 to 17, identified the one parent who put more pressure on them regarding their participation in sport. This parent was the one asked to participate in the interview.

The roles and responsibilities of the coach in the transition process has not been investigated. Clearly, coaches make the decisions at the junior and senior high school levels as to which children will continue to participate in the sport and which ones will be "cut." However, the process for assisting the athlete through this transition, particularly for those athletes whose careers are being terminated, has not been explored. In the second study, interviews were conducted with coaches of youth entering high school sports. This is the pivotal point for most youth in the United States. Failing to make the high school team means that sports participation will be limited to recreational opportunities. Youth who are selected to participate are provided with another 3 or 4 years to learn and develop physically and may be selected for participation at the next level, i.e., intercollegiate sports, which is the stepping stone to most Olympic and professional sport opportunities.

### **RESULTS AND DISCUSSION**

In the first set of data, six major themes emerged from the data: Parental involvement, impact on the family activities, financial concerns, dilemmas parents face, parental pressure, and managing time to accommodate commitments. Parents are a critical part of getting youth started in sport and of providing youth with the opportunity to continue participation in sport. Coaches are vital to the developmental process of youth in sport by providing a practice setting where youth can learn and develop skills, strategies, and knowledge of sport, but must also make decisions as to which children continue in sport and which may be "cut" from the sport. Parents have great expectations of the coaches of their children's sport teams,

but are often torn between the desire for their children to learn the sport and their desire for children to be on a winning team. Litherland (1995) conducted focus group interviews of youth baseball/softball parents regarding their expectations of coaches. Thirty-eight parents participated in several focus group interviews. Parents identified three major themes or expectations of coaches and three themes or expectations of parents of Little League athletes. Coaches should be knowledgeable about the technical aspects of the game, including an understanding of the rules, the knowledge to teach fundamental skills of the game, and the ability to teach and execute effective strategy. Parents expected coaches to possess interpersonal skills such as the ability to effectively communicate with athletes, understand the developmental needs of the athletes, and to act as a role model for athletes. The third theme or expectation focused on managerial skills including the coach's ability to be fair to all team members, the emphasis the coach placed on winning, and the general atmosphere created by the coach. Parents' expectations of parents revolved around the impact the parent has on the commitment of the child to the program, the multiple roles of teacher-coach-parent, and the role the parent plays in the coach-parent relationship.

Results of the second study revealed that coaches varied greatly in their views about their responsibilities in helping youth who are cut from their teams. Some coaches revealed a very "caring" approach with those who tried out for the team. They met individually with each athlete who tried out for the team to provide information about their strengths and weaknesses as a player and to thank them for coming out for the team. Other coaches took a more "business-like" approach and either posted a list of those on the team or read off the names of those who were on the team. While thanking all for trying out, no further information was provided to the athletes as to why their careers were being terminated. Coaches reported that this was one of the hardest, and least enjoyable, aspects of coaching. The discussion will focus on the impact of the involvement of parents and coaches on the "careers" of youth sport athletes. In addition, suggestions for further research will be provided.

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# **THE EXERCISE IDENTITY MEASUREMENT SCALE**

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## **KEY WORDS**

Exercise identity; exercise addiction; exercise dependence.

## **INTRODUCTION**

Exercise self schemata (Kendzierski 1990), exercise salience (Kline et al. 1994) and exercise identity (Anderson & Cychosz 1994) have all been proposed as aspects of the self which relate to a desire to become involved in exercise or to establish exercise as a fundamental part of one's life. Although proposed from different theoretical perspectives, each is concerned with the degree to which an individual perceives themselves as an exerciser and the prevalence this role takes in relation to other life roles and interests.

Potential positive and negative effects of a strong association with the role of exerciser can be considered. Individuals with high exercise identity scores may be more prone to exercise addiction whereby exclusivity of identification with being an exerciser can lead to dependence on exercise to maintain self worth. The tendency to suffer depression if injured and unable to exercise may also be associated with a singular identification with this role through disruption of an activity or fitness related goal which is central to self esteem. Indeed, Brewer (1993) found, in the context of competitive sport, that the extent to which an individual labels themselves as "athlete" influences their tendency to suffer from depression when injured or on termination of their athletic career.

Athletic identity (Brewer et al. 1993), referring to identity in a sporting environment, was initially viewed as unidimensional; however, a further study identified three subscales, described as social identity, exclusivity of identity and negative affectivity. Research by Martin et al. (1995), using swimmers with disability, identified a further factor, which they labelled self identity. They also reported a strong association with exclusivity and negative affectivity. This could be seen as supporting the proposal of exclusivity of identity as a factor linked to exercise addiction.

This research investigates the ability of exercise identity to predict levels of exercise participation. It is hypothesized that a low identification with the role of exerciser will be associated with those unable to progress from occasional or erratic exercising to a more regular commitment, and that exclusivity of exercise identity will distinguish between excessive exercisers and those exercising at a healthy level.

## **METHOD AND PROCEDURE**

Although the areas of recreational or leisure based sport may be similar to health related exercise, the psychological factors associated with competitive sport and high level performance can be seen as quite distinct (Biddle 1993). Brewer's 10 item Athletic Identity Measurement Scale (1993) was thus adapted to relate to exercise behaviour rather than sports participation. Items such as "I consider myself an athlete" and "I would be very depressed if I were injured and could not compete in sport" were altered to "I consider myself a fitness enthusiast" and "I would be very depressed if I were injured and unable to exercise". Respondents rated how much they agreed/disagreed with such statements on a 7 point scale. A pilot study confirmed that the adapted measure retained good internal and test-retest reliability (.89 and .90 respectively).

662 university employees, from a variety of employment positions, completed the Exercise Identity Measurement Scale, along with a series of items targeting levels of exercise behaviour and physical activity. The types of exercise pursued and variables such as frequency, intensity and duration were converted into Ainsworth et al.'s metabolic equivalent scores (1993). Categories for levels of activity were then determined according to the spread of the distribution.

## RESULTS

Mean exercise identity for the sample was 2.43 (s.d. 1.06). Multidimensionality of the proposed "Exercise Identity Measurement Scale" was examined using factor analysis with varimax rotation. The analysis indicated two factors with eigenvalues of more than 1. Factor A accounted for 52.3% of the variance and Factor B accounted for 10.5%. The remaining items were insignificant. The items included within each factor are listed in table 1. Only those items with factor loadings of greater than 0.5 are shown to simplify interpretation.

**TABLE 1. Items within each Factor of Exercise Identity**

Item	Variable	Fact. A	Fact. B
ID 1	I consider myself a fitness enthusiast	0.82720	
ID 2	I have many goals related to fitness training	0.78607	
ID 3	Most of my friends are exercisers	0.53313	
ID 4	Working out/training is the most important part of my life	0.53556	0.61782
ID 5	I spend more time thinking about fitness activities than anything else		0.83423
ID 6	I need to exercise to feel good about myself	0.75169	
ID 7	Other people see me mainly as a fitness enthusiast	0.62263	0.55180
ID 8	I feel bad about myself when I perform poorly in training	0.55749	0.50707
ID 9	Working out/training is the only important thing in my life		0.84148
ID 10	I would be very depressed if I was injured and unable to exercise	0.68078	

As can be seen, Factor A would appear to be exercise identity in a broad sense or "self identity", whereas Factor B can be described as exclusivity of identification with the self as an exerciser. Social aspects of exercise identity were not revealed as a separate factor. Factor B was most associated with high levels of activity, and was able to distinguish between those exercising regularly at an optimal or healthy level

(equivalent of 3.5 to 7 hours per week), those exercising supra-optimally, usually without any rest days in their exercise schedules (7 to 14 hours per week) and those considered to be exercising excessively, at risk of overuse injury (14 hours and over).

## DISCUSSION AND CONCLUSIONS

The Exercise Identity Measurement Scale was identified as comprising of 2 factors, self identity and exclusivity of identity. Exclusivity of exercise identity was found to distinguish between overexercisers and those exercising at a more healthy level. It is therefore supported as a mechanism to evaluate those at risk of exercise dependence or other negative effects of overexercising.

Martin et al.'s (1995) study reported that self identity relating to the role of athlete was related to competitiveness. For most respondents in this study, exercising was not described as a competitive activity, with performance related goals rated far lower than fitness enhancement, enjoyment of the activity, weight control and social reasons. Thus the concept of athletic identity and exercise identity can be seen as conceptually different, due to differences in the sporting and exercise environments of which motivation for participation is one example.

Social identity related to exercise was not identified. This perhaps reflects that although many people see exercise as a social activity, engaged in because friends do and perhaps a group activity, for others it offers a chance to do something alone, an escape from daily stressors which can include others. Items Martin et al. described as relating to social identity (e.g. "most of my friends are athletes") were located within the factor of self identity when related to exercise rather than sport.

The ability of the exclusivity of exercise identity factor to discriminate between each of the higher levels of exercise participation supports its potential to identify those at risk of developing exercise dependence. Those who define self-worth through just one social role are more at risk of depression should participation in that role be threatened (Brewer 1993). Exclusivity of exercise identity may thus be able to offer a solution to extreme self construing, as it may identify those at risk before an injury occurs and forces the situation.

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## **EXERCISE AS THERAPY FOR SCHIZOPHRENIA: A REVIEW**

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### **KEY WORDS**

Exercise, Schizophrenia

### **INTRODUCTION**

The physical benefits alone from regular exercise present a sufficient reason for inclusion in any form of psychiatric rehabilitation in terms of reducing morbidity (de Coverley Veale, 1987) and increasing the possibility of occupational rehabilitation (Hesso & Sorensen, 1982). Additionally, Plante (1993, 1996) has concluded that exercise may be helpful to psychotic patients experiencing anxiety, depression, and/or low self-esteem by alleviating those conditions rather than helping reduce thought disorder per se. The aim of the following review is to further examine this statement by critically evaluating the existing research utilizing exercise as an adjunct therapy for schizophrenia.

### **METHOD**

Published studies investigating exercise/physical activity as a therapeutic intervention for individuals with schizophrenia were identified using Social Citation Index and Embase via BIDS, PsychLit and Sport Discus. Studies were excluded if exercise/physical activity was not the specific intervention examined and/or the sample used did not specifically consist of individuals with schizophrenia. There were no exclusion criteria to the type of study reviewed and studies using qualitative or quantitative methodologies were included. Two decades of literature were searched from 1978 to 1998 with only English studies selected. Twelve studies were identified.

### **RESULTS**

#### **Psychotic Symptoms**

No research attempted to directly investigate the effects of exercise on psychotic symptoms. This more than anything has lead researchers such as Plante (1993, 1996) to conclude that it was not possible to draw any conclusions regarding the effect of exercise training on psychotic symptomatology. In contrast, findings from Chamove (1986) that participants exhibited less psychotic features on days of activity and Faulkner and Sparkes' (in press) description of two participants using exercise to control auditory hallucinations are the only tentative indications that exercise can alleviate chronic, psychotic symptoms.

More conclusive evidence does exist however, that schizophrenic individuals can develop effective means of dealing with their illness (Tarrier, 1994). Further inferences can be drawn from research that has explored the general coping strategies of individuals with schizophrenia. For example, as many as 78% of schizophrenics report that they have used exercise in some way to reduce hallucinations (Falloon & Talbot, 1981).

### Secondary Symptoms

All of the research reported a positive trend in relation to the secondary symptoms of schizophrenia. Studies incorporating measures of depression all reported reductions from baseline. Greater social interest, improved behaviour on days of activity, anxiolytic effects and improvements in self-esteem are also prominent albeit inconsistently reported. By alleviating these symptoms, overall quality of life is improved and the possibility of relapse may be reduced. Moreover, "satisfactory outcome may be more dependent on the modification of such disturbances than the psychotic phenomena themselves" (Hemsley, 1995, p.309).

## DISCUSSION & CONCLUSION

The reviewed studies all violated principles of external and internal validity to certain degrees. Participants had not been randomly selected from a greater population, and only one study mentioned randomly assigning participants to a treatment condition. Of utmost significance was that all participants were self-selected. Accordingly, the existing research is weak due to the limited number of studies reaching a "satisfactory level of scientific rigor" (Martinsen & Stephens, 1994, p. 65).

Rather than ignoring the existing research due to its inherent limitations it is also important to consider a number of methodological concerns that are particularly relevant to the study of exercise as an adjunct treatment for schizophrenia. Such concerns may make more rigorous research designs exceedingly difficult although not impossible to conduct. Examples include the heterogeneity of schizophrenia and the often vastly differing individual pharmacological interventions administered. The wide variation in clinical settings such as out-patient, in-patient and community settings may influence generalizability. Finally, the variety of responses to withdrawal from drugs and the small number of patients available at any one time makes experimental work difficult.

Given the lack of 'scientific' evidence linking exercise and psychological benefits for this population, there must be greater methodological diversity in examining the exercise and mental health relationship in a schizophrenic population in conjunction with an inclusive rather than exclusive acceptance of existing research. Attempts should be made to conduct rigorous experimental designs, particularly utilizing a randomized control treatment when possible. Specifically, the comparison of varying types of exercise (e.g., aerobic/non-aerobic), both against and in

combination with other therapies is most needed. However, if conditions are not amenable to the traditional approach, consideration must be given to the research that *can* be conducted of a quantitative *or* qualitative nature.

Increasing the quality of life of individuals with schizophrenia is paramount and the opportunity for consistent and structured exercise experiences will encourage this goal, whilst serving to complement any other therapy considered. Of utmost importance is encouraging the acceptance of exercise amongst mental health professionals. In addition to calling for further research in this underdeveloped area, attention must be given to the systemic barriers that stifle the delivery of exercise programming within institutional settings and the development of exercise opportunities in the community for this population.

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# **PHYSICAL ACTIVITY AND THE SELF OF ADOLESCENTS IN PRAGUE, MOSCOW AND COLOGNE**

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**Key words:** self-concept, body image, body image awareness, body shape evaluation, care for health and appearance, sport

## **1. Introduction**

Satisfaction with self has a great influence on one's behaviour. The level of (physical) activity of a person is, among other factors, determined by a sense of a high quality of the, self-value, competence, level of performance and physical attractiveness. It is very important how an individual feels and thinks of him/herself and how he/she thinks what others feel and think of his/her appearance, physical abilities and skills, attitudes, roles and responsibilities towards other people.

Body image, which we understand as emotionally affective evaluation of one's body, plays an important role in the life of modern man. Control of one's appearance as a part of body image concept, along with self-awareness, self-evaluation, fitness and health have a marked influence on self- satisfaction.

It can be assumed that there is a close relationship between body image and the level of active lifestyle represented by planned sport activity, proper nutrition, stress and health control.

## **2. Method and Procedure**

Researchers at three universities (Cologne, Moscow and Prague) co-operated in this study in order to investigate factors leading to the rational and healthy lifestyle. This research project aimed to identify the differences in health behaviour and evaluation of physical activity and nutrition in 3600 subjects from high schools, post-secondary schools and from the general adult population. Only data from 1200 seventeen years old high school students were analysed in this study.

The questionnaire was adopted from our previous research, it used five point Lickert scale in answering closed questions. Answers were from „not applicable“ to „very applicable“. Scores of some of the answers were added, which created more complex scales (Mrazek, 1984).

### 3. Selected results and discussion

Significant difference ( $p < 0.05$ ) is labelled by \* in the following tables. The study documented that the Prague students reported the longest physical activity time in schools and during leisure per a week. The Moscow students reported the highest level of participation in sports clubs. This type of activity is associated with a great deal of mental and physical stresses and time commitment. It may-be the reason why participation in sport club activities is reported only by less than half of the student population in Cologne and Prague.

Table 1. Physical activities

Hours/ week	Prague		Cologne		Moscow	
Physical activity in leisure	7,41		6,84		7,27	
unorganised	4,82	*	2,61		3,14	
Sport in the sport club	2,01	*	2,92		3,37	
School physical education	2,61	*	2,43		2,31	

There is a significant difference in ego orientation between Moscow students.

In evaluation of self, Moscow students were significantly different from the other two groups. In all aspects they valued the self higher than all other participants, at the other hand, the students from Prague reported the lowest scores in the self evaluation.

Table 2. Evaluation of Self

Scale/ sum of points	Prague		Cologne		Moscow	
Attention with self	13,12		13,46		13,91	*
Feeling of self worth	12,48		12,52		12,94	*
Social needs	11,50		11,31		11,92	*

Thirty-four item were instigated in relation to one's body. The answers indicated that all young people are mostly concerned with their appearance. The second concern for Cologne and Prague students is in the are of health for the Moscow students it is the body shape and attractiveness to potential sexual partners.

Table 3. Activities related to one's body

Activities/ points (scale 1-5)	Prague		Cologne		Moscow	
Health concerns	3,39		3,50		3,44	
Appearance concerns	3,64	*	3,91	*	4,17	*
Body shape concerns	3,25	*	3,40	*	3,69	*
Fitness concerns	3,29		3,44		3,59	*
Attractiveness to sex. partners	3,66		3,65		4,19	*
Weight control	2,57	*	3,04		2,86	

The Czech students reported a little concern with their body, they pay less attention to it and seem to be most detached from it than all other students.

#### 4. Conclusions

The results of sociological research indicate that sport and physical activity play important role in the lives of individuals and in the culture of modern society. This study attempted to clarify the relationship between sport and self-satisfaction, particularly the body related satisfaction.

Comparison of data from the different age samples (secondary school, post-secondary school, and adults) demonstrates similar national patterns indicating that the cultural factors play more important role in this area than age, level of education and professional orientation.

The largest differences among the three groups were found in the relationship to self, one's body and in the health-oriented behaviour. These factors are probably influenced by the cultural differences to a larger degree. Our interpretation of the results suggests that the Czech students are more critical to their body and to some personal factors in spite of the fact that their physical activity, nutrition, and health behaviour are on the higher level than that of the students from Cologne and Moscow. On the contrary, the Moscow students displayed a tendency to value the superficial personal factors very high. Students from Cologne have the highest health orientation.

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**PHYSICAL SELF-PERCEPTIONS AND SELF-ESTEEM IN  
OBESE ADULTS PARTICIPATING IN AN EXERCISE AND  
WEIGHT LOSS PROGRAMME:  
STRUCTURE AND PATTERNS OF CHANGE**

**Kenneth R. Fox, University of Exeter, UK**

**KEY WORDS:** Physical self-perceptions, self-esteem, exercise, obesity, weight loss.

**INTRODUCTION**

Self-esteem and related self-referent constructs are now regarded as important indicators of mental well-being (Sonstroem & Potts, 1996). Furthermore, recent attention has been drawn to such variables as a potential mechanism by which exercise participation might enhance mental well-being. Although theoretical developments and advances in self-perception measurement have stimulated greater interest, changes in the self that accompany exercise appear complex. We remain in the dark concerning the subtleties of self-perception change and the conditions under which positive change takes place so that our interventions are unguided.

In parallel, the incidence of obesity and overweight is rapidly increasing in developed and developing countries to the extent that it has now become one of the major threats to public health. Physical activity is the primary method available for increasing daily energy expenditure and encouraging weight loss. The physical self is inextricably involved in motivation for weight loss and exercise participation. Dissatisfaction with body is likely to drive weight loss intentions and efforts. On the other hand, the public display of the body may have a detrimental effect on motivation for exercise, particularly for those who have had little or negative previous experiences. Conversely, there is great potential for exercise to have a positive impact on the self with this population given the right circumstances. Perceptions of mastery through exercise have already been posited as the key to sustained weight loss after intervention. Finally, besides providing critical insight into understanding the motivational psychology of the obese, groups with extreme body types such as this provide a particularly revealing lens through which to scrutinise mechanisms of self-perception change through exercise. It is ironic that little is known about the physical self-perceptions of the obese.

Specifically, this study adopted contemporary self-perception theory and measurement to investigate a) the structure of the physical self and its relationship to self-esteem in the obese, and b) the nature of change in the physical self as a result of a comprehensive weight loss and exercise programme, with a view to providing insight into potential mechanisms of well-being enhancement.

**METHOD**

Participants were initially 123 males (age  $42.7 \pm 9.4$  yrs) and 398 females (age  $40.6 \pm 10.1$  yrs) who were seriously overweight or obese ( $\text{BMI} > 28$ ) attending a comprehensive weight loss programme at one of 6 hospital outpatient clinics in the United States. The programme was a 26 week comprehensive treatment involving a

protein sparing modified fast for 11 weeks, an exercise programme and weekly group cognitive-behavioural therapy. On entry, patients completed the Physical Self-Perception Profile (PSPP) and Perceived Importance Profile (PIP) (Fox & Corbin, 1989). Rosenberg's Self-Esteem Scale (Rosenberg, 1965), a body silhouette instrument to assess current figure and expected figure on completion, a weekly exercise recall, an exercise and weight loss history, a beliefs and values of exercise instrument, perceived exercise difficulty scale, and a social support for exercise scale.

A subsample of 49 males and 147 females (56% of those remaining in the programme) completed the battery of instruments at 13 weeks. Weight loss and exercise change were assessed and differences in all psychological variables noted.

## RESULTS

### Self-Perception Levels and Relationships

Male and female patient data were compared on entry for the PSPP subscales of body attractiveness, physical strength, sport competence, and physical condition, in addition to physical self-worth and self-esteem. Results indicated that both males and females scored low on all subscales when compared to a normal healthy middle aged adult population, with the exception of physical strength which was higher. Women scored almost at the bottom of the range for body attractiveness but men scored higher. Furthermore, physical self-worth and self-esteem were significantly lower in females than males. Correlational and partial correlation techniques revealed a close relationship between physical self-worth and global self-esteem in females that was largely a result of low body attractiveness. The strength of relationships was weaker for obese males. Females also placed greater importance on body attractiveness than males. It would seem from these data that the physical self is largely responsible for poor self-esteem in obese women but not men.

### Patterns of Self-Perception Change.

**TABLE 1: Physical Self-Perception Scores at entry and 13 weeks**

	Females		Males	
	Entry	13 weeks	Entry	13 weeks
Self-esteem	29.5	32.3*	31.5	33.3*
Physical self-worth	10.1	13.8*	13.2	15.4
Sport competence	11.4	12.5	15.1	14.9
Physical condition	9.6	13.4*	11.3	14.8*
Body attractiveness	8.6	10.9*	10.0	13.4*
Physical strength	13.3	13.6	16.3	16.1

\*  $p > 0.05$

Repeated measures MANOVA revealed significance improvements in self-perception profiles for females and males from entry to 13 weeks into the programme. Perceptions of body attractiveness, physical condition and physical self-worth were responsible and these improvements were related to self-esteem improvements. Patients had lost significant amounts of weight as well as increased their exercise over this period and it is not possible to fully determine the contribution of each. However, self-perception change was related to improvements in perceived ease with which patients found an array of exercise tasks, suggesting that exercise played a part.

### CONCLUSIONS

These data support the notion that obesity is psychologically more detrimental in females than males. Global self-esteem is closely tied to physical self-worth and body attractiveness in females. Because females rate themselves very low in attractiveness, yet attach great importance to body attractiveness, then it is not surprising that their mental well-being is under threat as a result of their excessive weight. Men seem less likely to suffer low self-esteem as a result of their obesity.

Both men and women experience significant improvement in physical self-perceptions as a result of weight loss and increased exercise. This is reflected in self-esteem enhancement. Multiple measures of self-perceptions provide a revealing picture of the pattern of change accompanying weight loss and exercise programmes. As yet, the relative contribution of weight loss and increased exercise to enhanced self-perceptions cannot be determined.

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# TERMINATION OF ATHLETIC CAREERS IN ELITE SPORT

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### (A) KEY WORDS

Elite athlete, career, termination, retirement, departure, Grounded Theory

### (B) INTRODUCTION

Literature concerned with the termination of athletic careers in elite sport does not present a particularly uniform picture. While some authors describe termination from athletics as a negative and traumatic experience (e.g. Ogilvie & Howe, 1986), others characterize it as a liberating experience which athletes greet with relief and view as an opportunity for personal development (e.g. Curtis & Ennis, 1988). The many different individual findings reveal a broad spectrum of at times contradictory attitudes, but present as yet no conclusive, theoretical model regarding the departure of athletes from high-performance sport.

### (C) METHOD AND PROCEDURE

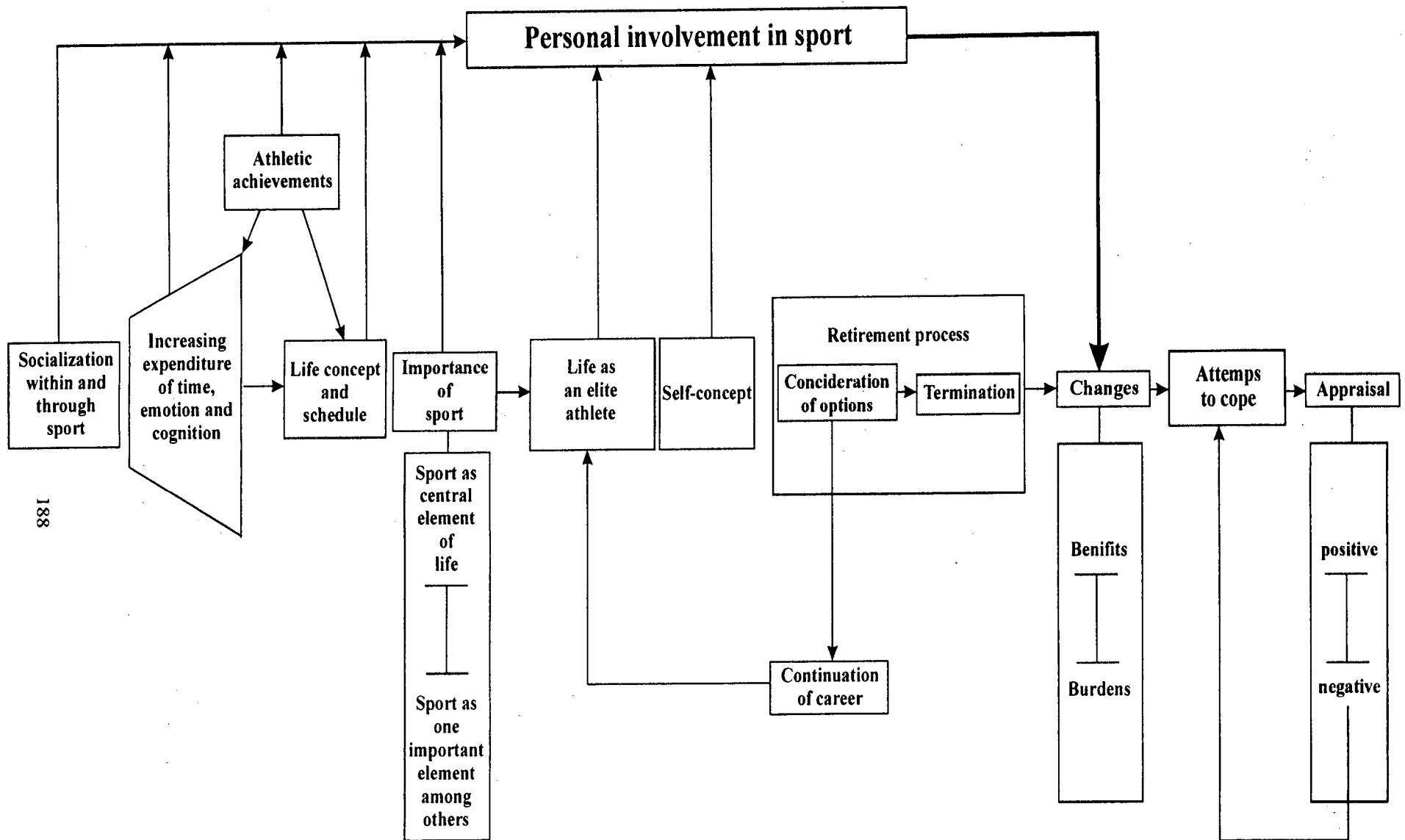
In the area of social research, Strauss's Grounded Theory (1994) in particular offers a more comprehensive approach to the entire research process than other qualitative methods, with its express goal being the creation of a theory. A predominant feature of the research process in Grounded Theory is theoretical sampling, whereby the representative random sample normally used in quantitative-statistical methods is replaced by the specific recording of as varied cases as possible. In line with this approach, after each interview the initial findings of analysis were used to determine which specific criteria should be met by the next athlete to be interviewed. On this basis, five former and one active elite athletes were interviewed, each of whom had successfully taken part in the Olympic Games, World or European Championships. The problem-centred interview (Witzel, 1985) was used as the method of data collection.

The interviews were assessed using the analysis technique from Grounded Theory, i.e. coding, categorizing and memoing, and this method was supplemented by a global analysis (Böhm, Legewie & Muhr, 1992).

### (D) RESULTS

Interpretation of the interviews led to the gradual formation of categories, then finally to the generation of a grounded theory and the development of a grounded process model to illustrate the termination of athletic careers in elite sport (cf. Fig. 1). The core category, in line with Grounded Theory, was called "personal involvement in sport".

*fin.*



I : Indication of a dimension

Figure 1: Grounded process model of termination of athletic careers in elite sport



## (E) DISCUSSION AND CONCLUSIONS

The results of the study revealed that termination from athletics is a serious step for elite athletes, and one which is generally perceived to be a burden. Athletes frequently avoid confrontation with this issue, so appropriate counselling and support services should be made available to prevent this serious step from becoming problematic or indeed traumatic. Such services might include:

- Obligatory counselling in preparation for termination
- A mentor or tutor system whereby former elite athletes, who have successfully come to terms with their departure from competitive sport, support and offer advice to other athletes as they make the transition to a "life after high-performance sport"
- Workshops to which elite athletes considering retirement or who have already announced their retirement could be invited

A common feature of all these measures must be that they systematically pinpoint psychological, social and material/financial aspects, giving the elite athletes the opportunity to express their concerns, hopes and fears with regard to their departure from sport. Successfully coping with transition considerably depends on the athletes's ability to see the positive aspects of a life after sport and to discover new fields of interests and activities while attaching importance to these fields. In the field of elite-level athletics it should go without saying that the process of physical transition be accompanied by measures aimed at "psychosocial transition".

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## **CARDIAC REACTIVITY OF AEROBICALLY TRAINED AND UNTRAINED PRE-TEENAGE BOYS TO MENTAL CHALLENGE**

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### **KEYWORDS**

Cardiac Reactivity, Pre-teenage Boys, Mental Challenge, Aerobic Training

### **INTRODUCTION**

Evidence is growing to suggest that psychological stress adversely influences cardiovascular health (Jaing *et al*, 1996). Studies examining young and old adult populations (e.g. Boutcher *et al*, 1997) have found that aerobic training facilitates reductions in heart rate during mental challenge. A resting heart rate below 60 bpm has been termed bradycardia. Such adaptations are thought to relate positively to cardiovascular health. However, to date no studies examining cardiovascular adaptation to physical training and reactivity to psychological stress of pre-teenagers have been documented. Moreover, no evidence exists to show that aerobic training causes bradycardia in pre-teenagers, nor that trained compared with untrained pre-teenagers have different cardiovascular reactions to mental challenge. The dearth of this kind of research is largely due to the intrusive nature of some forms of cardiac monitoring, ethical restrictions and the difficulties faced in obtaining access to, and working with, paediatric populations. Thus, the purpose of this study was to examine cardiac response to mental challenge of aerobically trained and untrained pre-teenage boys.

### **METHOD AND PROCEDURE**

Aerobically trained ( $n = 15$ ) and untrained ( $n = 11$ ) pre-teenage (trained = 10.3 yr, untrained = 9.9 yr) boys acted as participants. Participant characteristics are shown in Table 1. Trained participants were all competitive swimmers and runners and reported that they completed at least 4 hours each week aerobic training and had done so for at least 16 weeks preceding the study. Untrained participants reported that they were not physically active for more than one hour each week. Electrocardiograph (ECG) was used to monitor beat to beat variance in heart rate of both groups during baseline and whilst participants performed the Stroop task. The term given to heart rate variance is heart period variability (HPV). HPV has been categorised as an index of the vagus nerve which is responsible for cardiac stimulation and suppression. Inter-beat interval (IBI) was determined every beat by measuring the time difference between the peak voltage of the ECG R-wave and the peak voltage of the subsequent R-wave. Heart rate was calculated from the IBI. Results for this study were calculated by using the second baseline condition and the first Stroop trial. Participants underwent baseline conditions lasting a total of 15 minutes, and two Stroop trials lasting two minutes with a three minute recovery period between each trial. The Stroop task (Stroop, 1935) is a word-colour information processing task to which participants are asked to make a verbal response. Words printed in opposing colours are displayed at random on slide (e.g., the word 'red' may be in purple type). Participants must respond with the colour in which the text is written and not the word it spells.

## RESULTS

Repeated measures ANOVA and post hoc analysis were used to examine differences between groups. In absolute terms, IBI was significantly different during Stroop recovery ( $F[4,67]$ , .042,  $p < .05$ ; Figure 1) and HPV scores were significantly different during baseline ( $F[1,58]$ , .224,  $p < .05$ ; Figure 2). As can be seen in Table 1, there were no significant differences in age, height, mass, resting blood pressure, and body fat percentage. However, untrained boys made significantly more errors during the Stroop task, and although they were no more anxious (STAI), their rating of perceived exertion (RPE) for Stroop was significantly greater than their untrained counterparts.

TABLE 1: Participant Characteristics (Means with Standard Error of the Means in Parentheses)

Variable	Trained ( $n = 15$ )	Untrained ( $n = 11$ )
Age (yr)	10.3 (.4)	9.5 (.2)
Height (cm)	142.3 (2.3)	137.3 (.4)
Mass (kg)	34.4 (1.3)	31.1 (1.6)
Systolic blood pressure at rest (mmHg)	99.1 (3.3)	99.6 (1.6)
Diastolic blood pressure at rest (mmHg)	61.0 (3.1)	63.6 (4.1)
Body fat percentage	15.0 (1.1)	17.3 (1.3)
Stroop error	7.6 (1.5)	11.3 (1.9)*
RPE – Stroop	13.7 (0.6)	16.7 (0.5)*
Anxiety (STAI)	33.1 (2.3)	32.5 (2.1)

\* = significantly different ( $p < 0.05$ )

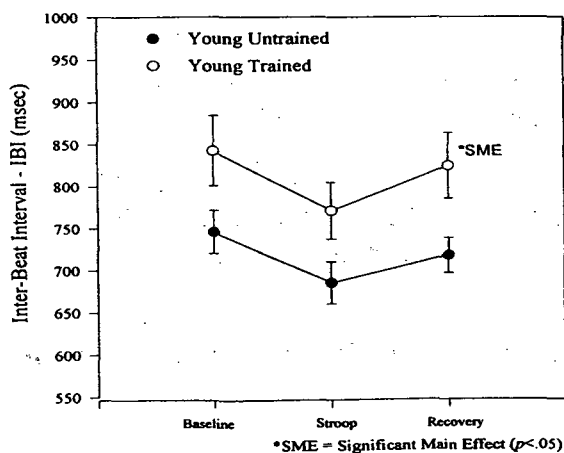


Figure 1. IBI analysis during baseline and Stroop

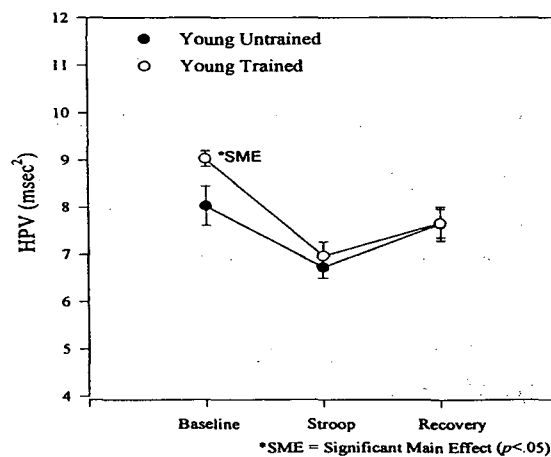


Figure 2. HPV analysis in the high (.12 - .4 Hz) domain during baseline and Stroop

## DISCUSSION AND CONCLUSIONS

Three issues are raised by the findings of this study. The first is that trained participants had increased cardiovascular sensitivity to mental challenge, and secondly, untrained participants were less likely to rely as heavily on parasympathetic innervation for cardiovascular response to psychological stress. Finally, much like studies of HPV with adults, aerobically trained boys possessed lower heart rates at rest and during mental challenge, and their hearts were under greater vagal influence than untrained.

Although trained participants demonstrated significantly lower heart rates at rest and during Stroop and Stroop recovery than untrained participants, trained participants did not possess resting bradycardia (heart rate below 60 bpm); a finding that supports prior studies examining aerobic training adaptations of children.

As displayed in Table 1, trained participants found Stroop significantly less difficult and made significantly less errors. A feasible explanation for these differences is that trained participants, having taken part in competitive sport, may be more able to cope with evaluative experiences, and thus interpret the stressor as less threatening.

It should be noted that children who are genetically cardiovascularly endowed might be more likely to take up endurance sports. Thus, because trained participants were recruited on the basis of higher levels of structured aerobic training, it is unclear whether participants in the trained group acquired their physical characteristics through training or genetic predisposition.

In summary, trained and/or aerobically fit children possessed significantly lower heart rates at rest and during mental challenge than their untrained counterparts. Furthermore, the reactivity of their cardiovascular system to mental challenge appears to be greater. However, it remains unclear whether these differences exist as a result of aerobic training or because of genetic endowment.

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## **Investigation of functional condition of young football players in the before competition stage**

**P.G.Gaibov, M.G.Garayev**

**INTRODUCTION.** Now-a days the football players of club's and assembled juvenile teams of Azerbaijan should participate not only in the matches of internal championship, but also in the international football matches. By this reason, we can wait the success only if the football player of 16-17 years old, in fact as an adult sportsman, is capable bear the big physical and psychological loads during the all season. (A.A.Suchilin, N.A.Laptev, 1978; E.V.Scomorochov et al., 1984; D.A.Chulibayev, 1988; R.G.Gaibov; G.G.Garayev, 1990; S.V.Dubrovsky, I.N.Solopov, 1998).

By this cause, while loading the sportsmen, it is necessary to accomplish careful control of their functional condition and character of bearing of training and competition loads. The similar investigations, held by us (R.G.Gaibov, M.G.Garayev, 1983, 1998) on the football players of master's team, allowed to determine the circle of reliable and informative methods of control and to develop the criteria of estimates of player's functional readiness on the basis of parameters  $PWC_{170}$  and nervous-muscular apparatus.

**METHODIC.** Considering these data as a basis, the functional condition of 26 football players of juvenile assembled team of Azerbaijan (the players of 16-17 years old) was investigated in the before competition stage. The reaction of cardiovascular system to the standard dosed work (3- cowers during 30 seconds), according to the test of Ryuffe and percentage parameter of adaptation level was calculated according to increasing of pulse's frequency, as an answer to the load. Determined on the  $PFC_1$  in the 1 minute of rest in compare with RFC in the rest (considered as 100%) and percentage parameter of speed of recover on  $RFC_2$ , determined on second minute of rest. The functional condition of nervous-muscular apparatus is evaluated using the method of miotonemetering on the basis of parameters of tonus of direct head of forehead muscle of hip in the conditions of enervation and arbitrary strain. The amplitude of tonus was calculated as a difference between these values estimated in the above said extremal positions. The force of muscle of shin-bone was measured while the sole of the foot was bending in the sale of boot, by special designed dynamometer.

**RESULTS.** The accomplished investigation and analysis of results of previous observations (R.G.Gaibov, M.G.Garayev) make it possible to evaluate the functional condition of football player on the basis of developed criteria of pulse parameters of Ruyffe's test, tonus and force of muscles.

The analysis of results of investigation of team on the basis of PFC data and its parameters in percentage in comparison with evaluation criteria, shown, that index of Ryuffe and percentage parameter of recovering ( $PFC_2$ ) correspond to the higher level, but same parameter of adaptation ( $PFC_1$ ) correspond to the middle level. The

pulse data, ranged on playing function of football players revealed the higher level of Ryuffe's index for back players, with tendency of its lowering accordingly for halfback players, forwards and goalkeepers. The analogical order also was shown on percentage parameters of adaptation and especially – of recovering. It should be noted, that all three parameters of goalkeepers were less in 1,5-2 time, than of field players and was evaluated as an average.

These differences are conditioned by rather big value of PFC for according group of players in the rest, also by meaningful increasing of this parameter as a reaction to standard load, and also by retarded recovering of pulse frequency, determined in the second minute of rest.

The accomplished analysis of parameters of tonus of right and left hip's muscles of football level, and in the strained condition – the higher level, without meaningful differences between ends. Notwithstanding to this fact, the amplitude of both muscle's tonus also were in middle level. Such non-high value of tonus amplitude of football player is linked mainly with residual print processes in the muscles, as a result of non-full recovering from training loads. Considering the play functions, the parameters of enervated and strained muscles tonus of goalkeeper and its amplitudes corresponded to the higher level. The parameters of tonus field player's muscle's mainly back players and forwards, in condition of enervation more than 11-12, and for amplitude – less than 11,5mt (i.e. sufficiently worse) and were evaluated on the level of under average. Somewhat better results were recorded for halfback players. The average values of maximal arbitrary force of muscles of sole benders of right and left foot sole were equal and corresponded to the average level. The highest parameters of force and tonus of strained muscle were found for goalkeepers and lower values – for forwards with difference equal to 16-18kg. The halfback players had somewhat better force parameters, and parameters of back players were close to parameters of goalkeepers.

It should be noted, that meaningful variation of individual data was observed for football players. The functional condition on parameters of Ryuffe's test and muscle's tone was evaluated on higher level for one group of players, and on low level for another players. At the same time the estimates of investigated system were absolutely opposite for the same sportsmen in some cases. The observed sufficient differences on individual data, according to our viewpoint, are conditioned by three factors: the genetical predetermination of development of one or another function, various level of training of football players at the moment of observation, and the playing function. The latter is confirmed by fact, that field players have the characteristics of muscle's tonus less than same for goalkeepers, but field players have more pulse results according to goalkeepers. This fact is explained by difference in training and competition activity of them.

**DISCUSSION.** Parameters of Ryuffe's test than the accomplished investigation shown that functional condition of assembled juvenile team of Azerbaijan, according to reaction of cardiovascular system to the standard load on parameters of Ryuffe's test was evaluated as higher in the before competition stage. At the same time the functional condition of field players of various playing functions was close to this

level, but for goalkeepers – to the middle level. The estimate, at whole for team, on amplitude of tonus, which is integrated parameter of nervous – muscular apparatus, and on muscle's force, corresponds to the middle level. On playing functions, the goalkeepers have higher level and the field players have the middle level.

**RECOMMENDATIONS.** On the basis results of investigation of juvenile football players' functional condition the following recommendation for planning of training loads and for choice of recovering means are developed:

- the previous volume of loads on the team at whole should be kept, because there aren't any contrary factors;
- the training process should be individually, taking into account the revealed level of functional parameters of investigated systems of organism;
- the field player should increase up to 50% of whole volume, the work, of own-force and speed-force direction in the zone of near and submaximal power;
- the attention should be paid to the individual using of means, accelerating of recovering processes (swimming, massage, sauna).

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# **SELF-DETERMINATION, ACHIEVEMENT GOAL ORIENTATIONS & PHYSICAL SELF-WORTH**

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**KEYWORDS:** Physical Self-Worth, Intrinsic Motivation, Task Orientation, Ego Orientation

## **INTRODUCTION**

Although testing certain theories originally formed for general psychology has proven fruitful, exercise psychology needs to adapt more global theoretical constructs to explain exercise behaviour. New theoretical models need to be plotted in order to motivate physical activity participation. On the other hand even when community-wide interventions are applied, they often remain unsuccessful as adherence is quite low and attrition rate is over 50 per cent within the first six months (Biddle & Fox, 1989). In order to increase exercise participation, human motivation must play a central role.

Deci and Ryan (1985), based on the premise that people must satisfy the three basic psychological needs for autonomy, competence and relatedness in order to internalise and integrate aspects of society, formed the theory of self-determination. Within this organismic theory each action or behaviour is determined from the degree of intrinsic and extrinsic motivation it emanates. Intrinsic motivated actions are defined as self-determined whereas extrinsic motivated behaviours vary in their degree of self-determination, having either a relatively internal or external locus of causality. By their nature intrinsic motives are more salient as they are related to the inherent experiences of competence, satisfaction and interest. Additionally, research findings have shown that intrinsic motives are the best predictors of persistence in exercise programmes.

One other human motivation theory that deals with the concept of ability and competence is goal perspectives theory. Nicholls (1989) theorised that adolescents and adults can interpret competence, ability and success in at least two different ways. The first type is called "task goal orientation" (self-referenced) and the other "ego goal orientation" (normative or other-person referenced).

In both the previous motivational theories discussed, the adaptation and the realisation of the self is critical in order to understand each motivational consequence. Physical self measures (Marsh, 1997), have proved related to certain life adjustments people make, to future swimming performance, to exercise participation, and to one of the general components of global self-esteem.

The theoretical link between self-determination theory (Deci & Ryan, 1985), achievement motivation theory (Nicholls, 1989), and multidimensional physical-self is critical as "Future attempts to assess competencies and attributes [of the self] should also address the degree of autonomy and mastery accompanying each" (Fox, 1997, p.133). Through an extracted structural equation model certain theoretical considerations and possible theoretical advances will be discussed.

According to Nicholls (1989) ego orientation represents an internally controlling state in which one's self-esteem is subject to certain outcomes; although this reality can be motivating



(extrinsically motivating) at the same time it can endanger intrinsic motivation and self esteem. Ego goal orientation possibly challenges the level of self-esteem as direct comparison can influence exercisers' level of physical self-worth. On the contrary, recent findings from the field of sport and exercise psychology have supported the association between task orientation and positive behavioural and emotional patterns (Duda, 1993; Whitehead & Corbin, 1997). Treasure and Biddle (1998), using Structural Equation Modelling, found a direct path between task orientation and physical self-worth in physical education classes. As Deci and Ryan (1985) argue, there is always a positive relationship between autonomy orientation and self-esteem, and no direct link between controlling orientation and levels of self-esteem. The presence of choice and autonomy in the exercise environment has a direct effect on the way exercisers perceive their global physical worth. In this way, intrinsic and identified motivation is conceptually closer to self-esteem development and maintenance. The previous researchers have also argued about the relation of task orientation and intrinsic motivation. As an exerciser is getting more focused on the interesting aspects of the activity, particular outcomes become uninteresting, self-improvement takes over and the exerciser experiences less tension and pressure. The opposite can be inferred by the theories of self-determination and goal perspectives for ego orientation and intrinsic motivation: Outperforming others can not support self-determination when it becomes a means to an end. On this occasion, ego orientation is more a function of extrinsic regulation and external contingencies.

### METHOD AND PROCEDURE

With the above theoretical constructs in mind a Structural Equation Model was constructed. Using EQS, the model was tested a sample of Greek exercisers (N=350) participating in 4 different exercise activities. The hypothesised relationships between the variables are represented by the arrows. The paths with the star represent the paths that were finally confirmed in the extracted model (Figure 1).

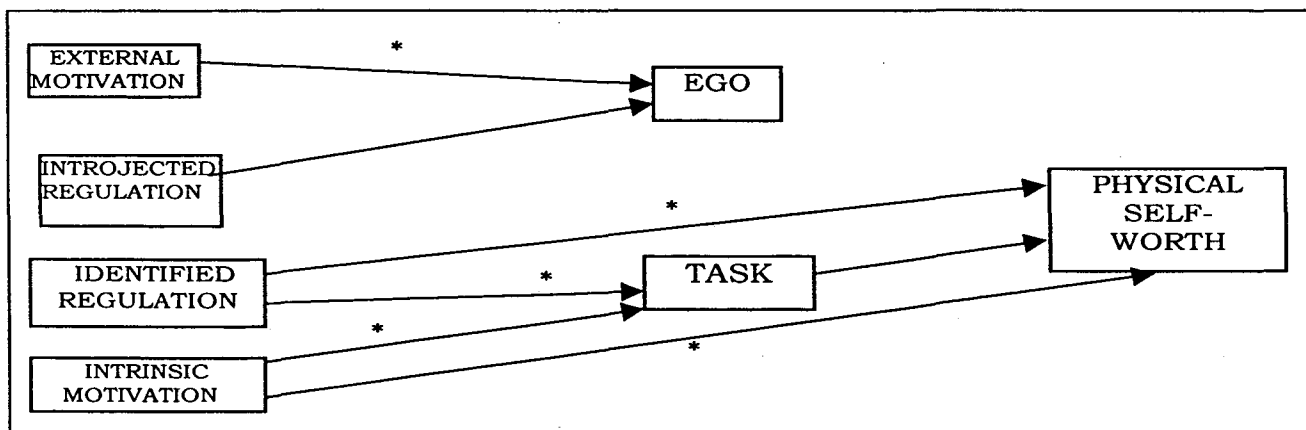


Fig. 1. Overall Structural Equation Model for the Examined Variables

As can be seen from the hypothesised and the overall Structural Equation Models the path from Introjection to Ego Goal Orientation and the path from Task to Physical Self Worth were not supported. While the theory does support the unrelated nature of Introjection and Ego Goal Orientation variables the same is not true for Task and Physical Self Worth. Many researchers (e.g. Treasure and Biddle, 1998), have argued for the strong relation of Task and Self-esteem but this trend was not supported in this study. It seems that the presence of self-determination continuum at a higher level of prediction modified the former relationship. Identified and

intrinsic motivation proved stronger predictors of physical self-worth and the relation between task orientation and physical self-worth becomes spurious with their existence. This study helps clarify the relationship between the two examined motivation theories and physical self-worth.

## DISCUSSION AND CONCLUSION

While self-determination may be able to act as a mediator between task and global physical worth the opposite was not supported in this study. The formation of self-determination based on three elementary human needs for autonomy, human relatedness and competence (Deci & Ryan, 1985) proves to be more global (holistic) than the need for competence and its variations that goal orientation theory (Nicholls, 1989) posits. In the exercise domain particularly, it shows the great significance perceived choice holds for behaviour

Situation measures related to autonomy (at a higher prediction level) could possibly clarify the previous results as self-determination reports are influenced by the perceived context of the activity, differentiating in this way the state and trait nature of self-determination. We can not underestimate the major impact of the referring physician or the exercise leader in the formation of perceived autonomy or control in the exercise context.

In the same way, repeated measures of the variables in focus could clarify more the relation between the constructs of task orientation, intrinsic motivation and identified regulation as both motivational constructs have been shown to be important in the sport and exercise settings (Duda, 1993; Deci & Ryan, 1985). In this way, longitudinal studies should be fruitful in determining the motivational effect of these theories.

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# **RELATIONSHIPS AMONG EXERCISE IDENTITY AND EXERCISE BEHAVIOR IN PHYSICAL EDUCATION STUDENTS**

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Key Words: exercise identity, physical activity, physical exercise, physical education students

## **INTRODUCTION**

Research has documented that participation in regular exercise is advantageous to an individual's physical health and psychological well-being (ISSP, 1992). However, the small proportion of the community involved in sport and exercise indicates that a better understanding of determinants of initiation and maintenance of exercise behavior requires further investigation efforts (Brawley, 1993; Dishman, 1990; Sallis & Hovell, 1990). Research perspective based on the reciprocal relationship between role-identities and behavior is considered a promising basis for explaining current participation in exercise. In this sense, Anderson & Cychosz (1994) developed a valid and reliable measure of salience of exercise identity, the Exercise Identity Scale. Even though this survey instrument showed a significant relation with other exercise participation variables further analysis of its effectiveness in other populations is required.

The purpose of this work is to analyze whether we can replicate the results of previous research in the case of Physical Education undergraduate students. In the first place, to determine whether there are significant grade level differences in exercise identity. Secondly, to analyze whether differences in exercise identity are related to differences in behavior indicators of sport and physical participation.

## **METHOD AND PROCEDURE**

### **Subjects**

In this study took part the whole of the student body (187 males and 111 females) enrolled in the Basque Institute of Physical Education, Vitoria-Gasteiz, Spain. The students were between 18 and 40 years of age (mean age = 21.85, SD = 3.09). After obtaining informed consent form from subjects, questionnaires were administered at the end of the physical education classes.

### **Instruments**

A Spanish version of the "Exercise Identity Scale" (Anderson & Cychosz, 1994), that measures the salience of an individual's identification with exercise was used. In addition to the

nine exercise-identity items, self-report data on exercise including number of weeks of exercising after course start, hours/week of exercise, and perceived intensity of exercise (rating in Borg' scale (Borg, 1970) the level of exertion in average sport or exercise session).

## RESULTS

Structural analysis indicated there was a strong single factor (with an eigenvalue of 4.30 which accounted for 47.8% of the total variance) influencing responses to the nine items, and suggesting that the scale could be treated as an overall measure of exercise identity. Factor loadings ranged from .75 to .53. Cronbach's alpha (.86) was calculated to determine the internal consistency of the scale and all items were significantly intercorrelated with item-total correlations ranging from .73 to .58, with a mean of .69. The re-test reliability (.91) was assessed over a 1-wk. interval. No gender differences were evident ( $F = .04$ ,  $p < .83$ ) on the total score. However, the findings showed significant differences between the faculty grade levels ( $F = 2.94$ ,  $p < .05$ ). Post-hoc analyses using Tukey's honestly significant differences (HSD) procedure identified significantly higher physical identity in the 1st year students than the remaining ones (see Table 1). No more statistically significant differences among groups showed up.

**TABLE 1. Mean and Standard Deviation of Exercise Identity and Other Variables Related to Participation in Exercise by Grade Level and Gender**

		VARIABLES							
		<u>Exercise Identity</u>		<u>Perceived Intensity</u>		<u>Hours/Week</u>		<u>Number of Weeks</u>	
	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD
GRADE LEVEL									
1st YEAR	53	75.88	7.34	13.82	2.47	15.88	4.59	21.37	6.21
2nd YEAR	66	69.50	11.64	14.18	2.59	15.66	5.98	21.74	5.45
3rd YEAR	58	72.22	10.84	13.87	2.07	12.85	6.60	21.80	5.63
4th YEAR	64	70.19	12.59	13.70	2.03	11.59	5.58	22.65	4.25
5th YEAR	57	70.05	11.80	13.67	2.45	11.75	6.84	21.73	5.86
GENDER									
MALES	187	72.05	11.25	14.17	2.25	14.00	6.47	21.71	5.63
FEMALES	111	70.39	11.25	13.30	2.36	12.76	5.75	22.17	5.17

In order to analyse the intercorrelation of exercise identity with exercise behavior self-report data on exercise were used. All the correlations showed that exercise identity had a significant positive relationship ( $p < .001$ ) with each of the three exercise participation variables (perceived intensity  $r = .41$ , hours/week  $r = .30$ , number of weeks  $r = .24$ ). The subsequent regression analysis (Table 2) with the exercise identity as the dependent variable and the three indicators of exercise participation as predictor variables was found significant ( $F = 27.46$ ,  $p < .0001$ ). Perceived intensity of exercise ( $B = .33$ ;  $t = 5.62$ ,  $p < .0001$ ) was the best predictor of exercise identity.

**TABLE 2. Regression Analysis of Exercise Identity With Perceived Intensity, Hours/Week, and Number of Weeks**

Variable	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	Sig <i>t</i>
Hours/Week	.228084	.101030	.132130	2.258	.0248
Perceived Intensity	1.519090	.270051	.330694	5.625	.0000
Number of Weeks	.416594	.107819	.209607	3.864	.0001
(Constant)	38.408311	3.906870		9.831	.0000

$F = 27.46, p < .0001$

## DISCUSSION AND CONCLUSIONS

Findings based on factorial analysis provided support, in the case of Basque physical education students, for a single factor structure hypothesized by the authors of EIS. The reliability of the scale was also supported. Measure in EIS scale was significantly related to other self-report variables on exercise. Consistently with previous research identity (Kendzierski, Furr & Schiavoni, 1998) the perceived intensity of exercise was identified as the most important predictor of exercise. We can also conclude that 1st year students have significantly stronger exercise identity than the remaining ones in the Physical Education Faculty. In summary, the results provide evidence of validity of the EIS in the case of Basque physical education students.

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## **DIFFERENCES IN STUDENTS' MOTIVATION IN PHYSICAL EDUCATION ACCORDING TO THEIR PARTICIPATION IN SPORTS**

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**KEY WORDS:** Motivation, physical education, outcome expectancies

It is recognized that physical education has the potential to have a significant impact on public health (Haywood, 1991). Consequently, it is important to examine student motivation for participation in physical education, especially after recent reports that youngsters do not engage in vigorous physical activities sufficiently enough to benefit their health (Armstrong & Biddle, 1992). Thus, the present study examined possible antecedents of students' intentions to participate in an after school health related fitness program in relation to their perceptions of the physical education classes.

Several indices of students' motivation were examined. First, outcome expectations for their participation were assessed. Rodgers and Brawley (1991) have argued that outcome expectancies are formed by the interaction of two factors: a) outcome likelihood which refers to the probability that a certain action will lead to a certain outcome, and b) outcome value which refers to the value assigned by the individual to the possible outcome of the action. Goudas and Bagiatis (1998) showed that students outcome expectations determined to a large extent their intrinsic motivation in physical education lessons.

Second, students' intrinsic motivation in physical education was examined. Intrinsic motivation is regarded as an important outcome in education (Deci & Ryan, 1985). Moreover, it has been shown that intrinsic motivation affects students' intention to stay involved with the lessons in the future (Goudas, Biddle, & Underwood, 1995; Papaioannou & Theodorakis, 1997). Also examined were students perceived competence and their perceptions regarding the usefulness of school physical education.

A second aim of the present study was to compare students participating in organized sports outside school with students having no sport experience. Previous studies (e.g. Anderssen, 1993) have shown that students who have sport experience perceive physical education more favorably and have more positive experiences in physical education classes.

### **METHOD**

#### Sample

The sample of the study consisted of 247 secondary school students (grades 7 -12) from two schools located in a medium sized town. Permission for the study was obtained by the physical education advisor as well as by the school head teachers. Students responded to the questionnaires anonymously and were assured about the confidentiality of their answers.

#### Instruments

Outcome expectancies. Two different scales were used for the assessment of students' outcome expectancies for physical education. In the first one named outcome likelihood, students rated, on seven-point scales ranging from "very unlikely" (1) to "very likely" (7) the likelihood of occurrence of the ten different possible outcomes of physical education. In the second one named outcome value students rated, on seven point scales ranging from "very unimportant" (1) to "very important" (7) each of the outcomes in terms of its value for them.

Each outcome likelihood score was multiplied by the respective outcome evaluation score and a composite score was obtained by summing up the products.

Intrinsic motivation. The Intrinsic Motivation Inventory (IMI; Ryan, 1982) was used. IMI comprises four subscales: Enjoyment/Interest, Effort/Importance, Competence and Pressure/Tension. A composite score provides an index of intrinsic motivation. However, in the present study the Competence subscale was omitted because it overlaps conceptually with the perceived competence measure we employed. A composite score for intrinsic motivation was obtained by adding all the items with those of the pressure/tension subscale reversibly coded. Cronbach's alpha for the composite score was .81.

Perceived competence. Perceived competence was assessed by two items asking students to rate their competence in physical education compared to their classmates. Cronbach's alpha for this measure was .86.

Perceived usefulness. Finally students responded to a scale with two items asking about the usefulness of the physical education subject (Cronbach's alpha = .70). These items were adapted by Papaioannou and Theodorakis (1996).

Intention. Students were presented with a short vignette describing an after school health-related fitness program and indicated their intention to take part in this program by replying to two respective items. (Cronbach's alpha .87).

## RESULTS

Table 1 presents descriptive statistics for the motivational variables separately for students participating or not in organized sports outside schools. As can be seen, there are significant differences in all variables, with students participating in sports scoring higher.

Table 1: Descriptive Statistics

	Students participating in organized sport		Students not participating in organized sport	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Outcome expectancies	28.5	6.6	27.4	8.4
Intrinsic motivation	4.92	.53	4.66	.61
Perceived competence	5.73	1.02	5.00	.93
Perceived usefulness	5.35	.89	4.44	1.09
Intention	5.09	1.65	4.90	1.39

Table 2: Correlations Between Intention and Motivational Variables

	Students participating in organised sport	Students not participating in organised sport
	<u>Intention</u>	<u>Intention</u>
Outcome expectancies	.46**	.25*
Intrinsic motivation	.30*	.11
Perceived competence	.10	.23*
Perceived usefulness	.39**	.05

Table 2 presents correlations between the motivational variables and students' intention to participate in an after school fitness program, separately for students participating or not in

outside school sport clubs. The motivational variables correlate significantly with students' intention but only for those students that are currently involved in organised sport. These correlations much lower for those students who do not participate in organized sports.

## DISCUSSION

The present results indicate that students have different experiences in physical education classes depending on whether they participate in organized sports outside school. It seems that the current practice in Greek physical education favors those students who are familiar with sports and probably discourages those students that have limited sport experience.

These results also show that students' outcome expectations correlate positively with students' intention to participate further in school physical education activities. It seems that both the anticipated outcomes of their participation as well as the value they assign to those outcomes determine their approach to physical education classes.

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# **SPORTS SITUATION - PSYCHOSOCIAL PROTOTYPE**

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**Key words:** sports situation, prototypicality, competitive sports

## **INTRODUCTION**

Sports situation is typical in particular sense - it is fairly good understood by its all participants, i.e. sportsmen expecting a victory and prize, spectators eager for impressions and interested in the course and results of the sports competition, as well as coaches and organizers of sports competitions, expecting the confirmation and justification of training and organizing assumptions. Thus, some psychosocial standards of the sports situation arise, which, many times repeated, stabilize its intrinsic organization, creating a prototype of sports situation (Tomaszewski 1976, Cantor, Mischel 1979, Patmore 1986, Joyce, Slocum, von Glinow 1992). The prototype may be considered both in an objective aspect, taking into account the sphere of the situation (external reality) and in a subjective aspect (psychological reality), where it exists only in sportsman's mind as a subjective categorial representation (Mischel 1977, Zaleski 1991, 1994). Well internalized situation prototype of given sports discipline results in the fact that the sportsman may adequately perceive and correctly anticipate anything that may occur under given circumstances and in a given time. Therefore, it should be expected that the description and explanation of psychosocial dimension of sports situation prototype, and, in wider perspective, determination of their connection with individual (subjective) condition of sports success, meet well established social demand (Singer 1986).

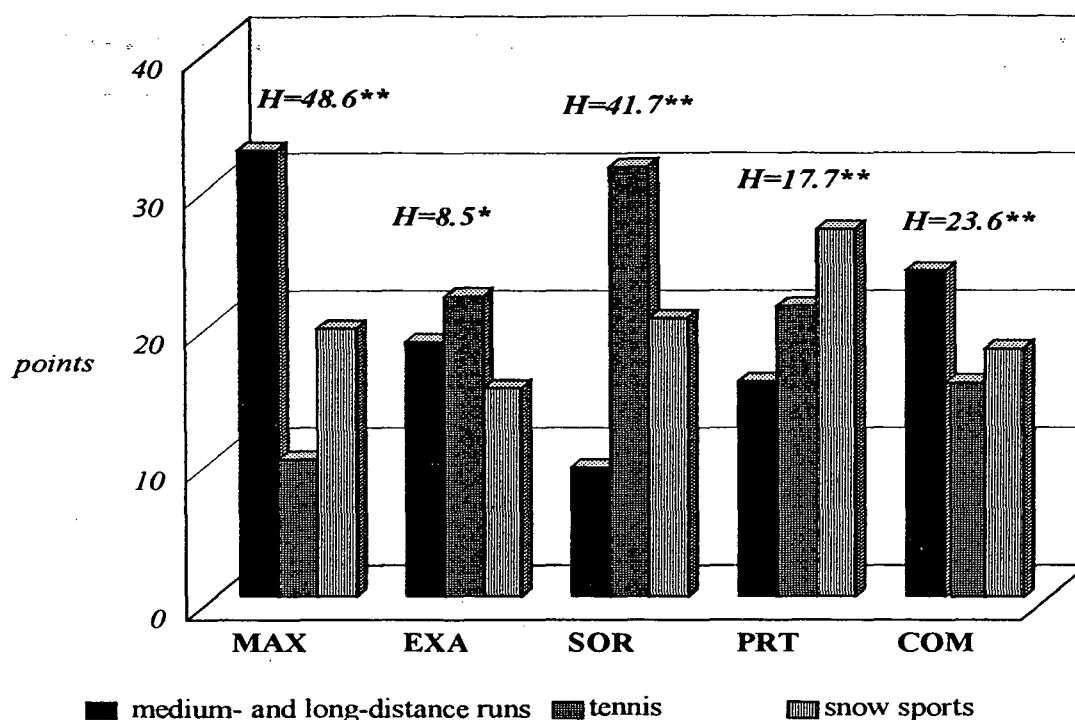
## **METHOD AND PROCEDURE**

In order to define psychosocial dimensions of sports situation the research includes a "Scale of Sports Situation Dimensions" SSSD (Gracz 1998) serving the purpose of determining the rate of such situation factors as: maximizing the activity, social receipt, prolonged training, competitiveness and exercise activity. The above mentioned scale has been developed in accordance to the procedure similar to the one used by Hall and Lindzey (1990) and according to general principles related to measuring scales used in social psychology (Brzeziński 1996). The research has been performed on 78 coaches (27 women and 57 men) of 17 sports disciplines. Examined persons were aged on the average 29 years, with training practice of 7 years.

It was assumed that the intensities of particular dimensions making the sports situation prototype might be remarkably differentiated, depending on specificity of given sports category. During the research the attempts have been made to find which prototype situation dimensions may be more or less important for selected sports categories: medium- and long-distance runs, tennis, and snow sports. The choice of the disciplines resulted from defined categorization criteria (Czajkowski 1984, Lipoński 1987).

## **RESULTS**

The analysis of the dimensions making a prototype of record-seeking sports situation, carried out separately for various sports categories (medium- and long-distance runs, tennis, snow sports) enabled to distinguish specific situation prototype for each of them. The information concerning the matter is presented in Figure 1. The results give evidence that contribution of each of examined dimensions in creating the prototype of competitive sports situation may be



MAX - maximizing the activity, EXA - exercise activity, SOR - social receipt, PRT - prolonged training, COM - competitiveness \* $\alpha < 0.05$ , \*\*  $\alpha < 0.01$

Fig. 1. Sports categories against psychosocial situation dimensions - intercategory differences based on assumed ranking. The differentiation among the dimensions is calculated by means of Kruskal-Wallis' H-Test.

different, according to specificity of a given branch of sports. This certifies the assumed research hypothesis. The differences found are of statistical significance and their measure is a result of Kruskal-Wallis' H-test, provided with particular dimensions in Fig. 1. The most important differences are obtained with maximizing the activity (MAX - 48.6\*\*), social receipt (SOR - 41.7\*\*), while exercise activity (EXA - 8.5\*) and prolonged training (PRT - 17.7\*) showed small differences. So, it can be deduced that, irrespective of the category of sports exercise, activity and prolonged training make commonly accepted dimensions of sports situation prototype.

Analysis of differentiation of intensity of psychosocial dimensions of sports situation prototype between particular sports categories is presented in Table 1. On the grounds of Mann-Whitney's U-Test the less differentiated dimensions are competitiveness (COM - 2.54\*) in snow sports and tennis and exercise activity (EXA - 3.52\*\*) in runs and snow sports. Irrespective of the above, it should be emphasized that in seeking psychosocial conditions of successes in sports activity the differences between particular categories are rather more significant than similarities among them.

## DISCUSSION AND CONCLUSIONS

Discussing the meaning of situation prototype in sports it is worth underlining that besides situation features of the sportsman also his subjective and mental features take part in its establishment (Cantor, Mischel 1979). Therefore, it can be assumed that the better is

**TABLE 1.** Differentiation in intensity level of the dimensions of competitive sports situation within particular sports categories - based on assumed ranking (Mann-Whitney's U-Test).

Sports categories \ Situation dimensions	MAX (maximizing)	EXA (exercise activity)	SOR (social receipt)	PRT (prolonged training)	COM (competition)
<b>R ÷ S</b>	6.50**	3.52**	- 0.42	0.91	4.56**
<b>R ÷ T</b>	5.32**	- 0.89	- 5.34**	- 1.60	1.84
<b>S ÷ T</b>	0.09	- 4.57**	- 5.64**	- 2.97**	- 2.54*
Kruskal-Wallis' H-Test <b>R ÷ T ÷ S</b>	48.59**	8.46*	41.68**	17.66*	23.57**

Explanations related to the Table: R - medium- and long-distance runs, T- tennis, S - snow sports: \* $\alpha < 0.05$ , \*\*  $\alpha < 0.01$

accordance of matching the situation and subjective components of the discussed system including the set of situation - sportsman - action - result, the more probable is high efficiency of sports activity.

1. The research shows that it is difficult to define a general and really existing prototype of sports situation. It should be rather a prototype of given sports category, different from the others.
2. Differentiated structure of situation dimensions in particular sports categories should enable to seek psychical success predictors in sports activity, according to the intensity and range of particular components of the prototype.
3. Research on situation dimensions of sports activity makes an important complement of the problems of sports psychology by the problems of interactive psychology, indicating extra-individual determinants of success in competitive sports.

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# **DO FEMALES ALWAYS FEEL VULNERABLE WITH MASCULINE TYPE TASKS?**

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**KEY WORDS:** gender, social facilitation, situational vulnerability

## **INTRODUCTION**

The issue of women's involvement in, and feelings of confidence in sporting situations has been an issue for practitioners and researchers for many years. One of the major issues to be addressed has been women's lack of confidence compared to male confidence. In 1977 Lenney suggested that females lacked confidence in certain situations. These were: situations which were male oriented, situations where feedback was likely to be ambiguous, or where the task was competitive or comparative. Lirgg (1991) has provided an extensive meta-analysis which supports this view. As most sports have been classified as being masculine in orientation and by nature are competitive, it is not surprising that these results have been found. In Great Britain the sport of association football is the national game and receives more media coverage than any other sport. It has been characterised as being masculine in orientation, but is played in growing numbers by females.

According to social cognitive theory (Bandura, 1977) mastery experiences and vicarious experience are important sources of self efficacy. As women gain more experience of, and acceptance in, a game such as football it would seem plausible that their confidence levels would increase. The main aim of the study was to investigate this view with respect to males and females in association football.

Previous work (May, 1990) has shown that the gender of an audience can significantly affect performance and feelings of evaluation apprehension. A further aim therefore was to examine the effects of gender of audience on the participants' performance and on their self confidence.

## **METHOD AND PROCEDURE**

### **Participants**

Participants were 12 male (mean age  $19.3 \pm .98$  years) and 12 female (mean age  $19.0 \pm 1.04$  years) Sports Studies or Physical Education students, all of whom had experience of playing soccer for at least 7 months.

### **The Task**

The task was the McDonald Wall Volley Task as modified by McMorris, Gibbs, Palmer, Payne & Torpey (1994).

### **Procedure**

All participants were pretested on the task to ascertain whether they were of similar footballing ability, and to judge whether the task was appropriate.

Each participant completed the task under 3 conditions: no audience, male audience, female audience. Conditions were counterbalanced to control for learning effects. Participants were instructed to complete the task as quickly and as accurately as possible. Before commencing the task all participants were fitted with a Polar heart rate monitor and then immediately before performance were asked to complete the CSAI-2. (Martens, Burton, Vealey, Bump, & Smith, 1990). The audience consisted of 8 males or 8 females, all of whom were known to the participants and who had soccer specific knowledge. The audience was placed alongside the testing area and was passive throughout.

### Design

A 2x3 (gender x audience) design was used with repeated measures on the latter variable. Dependent measures were: wall volley score, CSAI-2 scores, heart rate scores.

## RESULTS

Results for wall volley scores were analysed in a 2x3 (gender x audience) RM ANOVA. A significant interaction (gender x audience) effect ( $F_{2,33}=3.8$ ,  $p<.05$ ) was found, but no main effects for either gender or audience condition. Follow up Tukey analysis revealed that the difference lay in the finding that females performed better than males ( $p<.05$ ) in the male audience condition.

Only the self confidence scale of the CSAI-2 is reported here. A similar 2x3 RM. ANOVA revealed a main effect of audience ( $F_{2,33}=22.34$ ,  $p<.001$ ), but no effect of gender, and no interaction (gender x audience). These results are depicted graphically in Fig. 1. Follow up Tukey analysis revealed that both male and female scores were lower in both audience conditions ( $p<.05$ ). There was no significant difference between the 2 audience conditions.

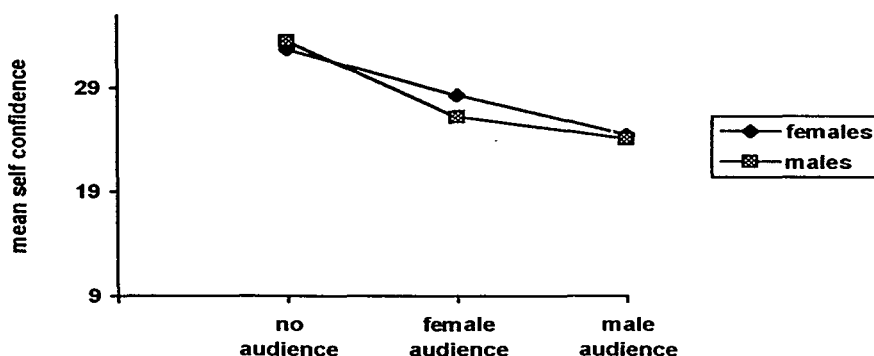


Fig. No. 1. Mean Scores for Self Confidence in Audience Conditions

Data for the heart rate scores were similarly analysed and revealed a significant audience x gender interaction effect ( $F_{2,33}=3.9$ ,  $p<.05$ ). No main effects were significant. Follow up Tukey analysis revealed that male heart rates were higher than female heart rates in the female audience condition, and vice versa in the male audience condition ( $p<.05$ ). These data are depicted graphically in Fig. 2.

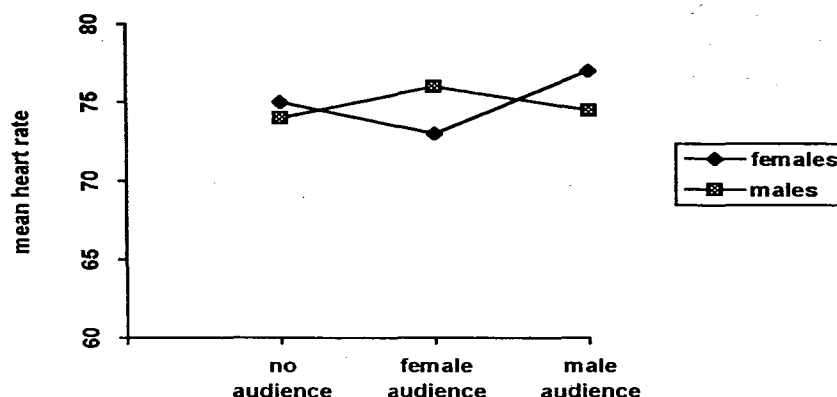


Fig. No. 2. Mean Heart Rate Responses in Audience Conditions

### DISCUSSION AND CONCLUSIONS

It can be seen from these data that females in this situation did not lack confidence with respect to their male counterparts. Lirgg and Feltz (1989) have noted that self confidence levels increase as skill proficiency increases. It is therefore encouraging that females who are in a supportive environment, and who have skill levels equivalent to those of males do not suffer necessarily from lack of confidence in a male oriented sport.

Audience effects were found however, but did not appear to affect the females any more than males. Again this is an encouraging result, and points to an increasing confidence level in females as a traditionally male oriented task becomes more familiar to them. Heart rate data would however point to distinct gender effects, but with neither gender being disadvantaged with respect to the other. In conclusion it would appear that females, at least in a particular social context, are growing in confidence with increasing experience.

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## **THE INFLUENCE OF PERFECTIONISM IN SPORT**

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**KEY WORDS:** Perfectionism, Sport.

In the previous paper, neurotic perfectionism was exposed as a neurotic trait, debilitating in nature, seen in academic settings to promote maladaptive motivational styles that hinder achievement striving. In recent years neurotic perfectionism has received increasing research attention in both clinical and educational settings as it has been shown to underpin a variety of clinical and motivational problems (Blatt, 1995; Frost & Marten, 1990). However, few studies to date have investigated this pervasive style of thinking within the realm of sport. This is surprising, considering that achievement striving and outcomes are so prevalent within the sporting context. The purpose of this paper is to outline what we know about the influence of perfectionism on achievement behaviour in sport and to provide direction for future research in this context.

Thus far, studies have suggested that perfectionism in athletes is strongly associated with negative achievement affect and maladaptive achievement behaviour. For example, one exploratory study by Frost & Henderson (1991) clearly indicated that those dimensions associated with neurotic perfectionism were linked to negative reactions to athletic competition among female athletes. Specifically, overall perfectionism and concern over mistakes were positively correlated with anxiety regarding athletic competition. Further, overall perfectionism, concern over mistakes and doubts about actions were negatively correlated with self-confidence in athletic contexts. Similarly, Hall, Kerr & Mathews (1998) identified neurotic perfectionism as a consistent significant predictor of high cognitive anxiety, high somatic anxiety and low confidence. In addition, perfectionists are more likely to experience negative reactions towards mistake making and engage in more negative thoughts than non perfectionists prior to competition (Frost & Henderson, 1991; Coen & Ogles, 1993). The findings from this research confirm those found in academic settings (Frost & Marten, 1990).

Research has also linked neurotic perfectionism with two areas of maladaptive achievement behaviour, exercise addiction and burn-out. Coen & Ogles, (1993) demonstrated that obligatory runners experienced higher levels of trait anxiety as compared to their non-obligatory counterparts, and moreover, were found to be higher in overall perfectionism, concern over mistakes and doubts about actions, i.e. those dimensions associated with neurotic perfectionism. One may argue that the reason that obligatory runners invest so heavily in sport is because this behaviour assists in the establishment of an identity and helps enhance their perception of self-worth. Any perceived threat to this goal will result in an increase in investment in that context, in order to protect the self. Hall, Kerr and Finnie (under review) suggest that the obligatory exercise behaviour is underpinned by firstly, an overstriving motivation to protect the self-worth and secondly, a constant concern that the self is being threatened i.e. a fear of failure.

Coen & Ogles (1993) demonstrated that as these athletes had a tendency to hold doubts about the quality of their performance and reported significantly higher trait anxiety scores, these athletes

were likely to be exposed to extreme anxiety experiences induced by perceiving threats to their self-esteem. Coen & Ogles (1993) work indicates that neurotic perfectionism may be an important antecedent of maladaptive achievement striving in obligatory runners. The over striving inherent within exercise addiction often leads individuals to burn-out. Specifically, Gould, Tuffey, Udry & Loehr (1996) demonstrated that dimensions of perfectionism differentiated between those who had burned out of tennis and a comparison group who continued to play competitively. This finding provides clear evidence that long-term achievement striving is unlikely when one is a neurotic perfectionist.

Not only has neurotic perfectionism been associated with maladaptive achievement outcomes, it has also been strongly linked to maladaptive achievement goals, as identified in contemporary goal theory (e.g., Duda, 1996). More specifically, Hall, Kerr & Finnie (under review) found that neurotic perfectionism was positively related to a predispositional ego-orientation towards running. That is, individuals who perceived success as demonstrating higher ability than others (Duda, 1996) appeared to experience higher levels of neurotic perfectionism than those who were low in ego-orientation. Conversely, those individuals who perceived success as improving their own performance were characterized by high scores on the personal standards dimension, considered to be an adaptive aspect of perfectionism. In addition, Hall, Kerr & Matthews (1998) identified that a strong task orientation was negatively associated with two of the dimensions considered to reflect neurotic perfectionism.

Although these findings highlight a strong conceptual overlap between the constructs of ego-orientation and perfectionism, very little is known about how these two constructs influence appraisal, personal meaning and self-worth. However, educational research suggests that the negative affects associated with neurotic perfectionism can be moderated by the strength of evaluation potential (Frost & Marten, 1990). Individuals who endorse an ego orientation are more likely to consider that sporting contexts display a strong evaluation potential. Similarly, perfectionists strive to avoid failure and will therefore dislike situations in which mistakes and failures are made salient. Evaluation and comparison are threatening to a perfectionist's self-concept and therefore public acknowledgement of failure would demean a perfectionist's self-worth. In short, it appears that neurotic perfectionists who also endorse an ego orientation will be more likely to perceive threat to the self and result in negative affect and maladaptive achievement behaviour.

These results are highly important because they suggest that if an individual adopts a task orientation then this will focus them upon personal rather than comparative cues when monitoring performance. The achievement setting would therefore be perceived as less threatening, as feedback on achievement striving would be within the control of the athlete. Motivational researchers have clearly indicated that the promotion of a task-orientation is possible. Studies have shown that strategies to promote such patterns of behaviour are transferable across varying contexts, including sport (Ames, 1992; Ames & Archer, 1988; Brophy, 1987, Duda, 1996). Given the conceptual overlap between neurotic perfectionism and ego orientation, the strategies to facilitate a task orientation may be invaluable for these athletes. Subsequently, research is needed to determine whether the manipulation of the achievement climate may reduce the debilitating impact of neurotic perfectionism in sport by mediating evaluation potential.



At present, very little is known about the full implications of perfectionism in sport. Research that furthers our understanding of perfectionism will in turn provide a greater conceptual understanding of achievement behaviour. Achievement in sport often requires individuals to work in a cooperative fashion and therefore researchers may benefit from examining perfectionism at both the individual and group levels. This will enable researchers to answer important questions related to the development of perfectionism, its influence on achievement behaviours, both adaptive and maladaptive, achievement related cognitions and affective responses.

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# **THE IMPACT OF THE ECONOMICAL TRANSITION UPON SPORT RETIREMENT IN ROMANIA**

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**KEY WORDS** : Psychology ; Sport; Retirement

## **INTRODUCTION**

High-performance sports is almost equally determined by specific factors - athlete's competence, training quality- and non-specific ones, coming from the social, family, school or professional environment of each athlete. The society he lives in, the culture, economical system, have a great influence on the athlete's performances and his whole career. Also, retiring from the sports life has to be approached from a multidimensional point of view ; researches reveal associate factors concerned the circumstances of giving up sport career (e.g. Sussman (1971), Hill and Lowe (1974), Mc Phearson(1980), Coakley (1983), Werthner and Orlick(1986), Epuran (1991), Baillie (1993), Murphy (1995), Stambulova (1997), etc.)

Since 1993, we have been interested in examining the influence of the social ,economic Romanian changes upon sports phenomenon and upon Romanian athletes' retirement reasons.

Our hypothesis states that the lack or insignificant social protection measures for athletes or former athletes (legislation, trade-unions, health insurance, social integration programs), political, economical social changes determine in a great extend early sport retirement and a difficult adjustment in most of the cases.

## **METHOD AND PROCEDURE**

In order to verify the hypothesis, 62 former athletes were investigated, they having different ages (between 18 and 36 years old), different competence, sport classification and experience (national and international), from different sport branches : soccer, basketball, rugby, gymnastics, athletics and swimming. All these have dropped-out sports career in the last five years.

The subjects filled in a 40 items questionnaire, representing factors which could influence the retirement of the athletes. Their answers were distributed on a Lickert Scale, with five levels from 1 (min.)= strong disagreement, to 5 (max) = strong agreement.

## **RESULTS**

The data statistical analysis emphasize the main factors of retirement, classified in order of their importance given by the subject

**TABLE 1.** Means and standard deviation

CRT. NR.	ITEM NR.	FACTORS	MEAN	STANDARD DEVIATION
1	39	The will to study in order to become a trainer	3.35	1.45
2	33	Inadequate material compensation	3.23	1.41
3	10	Improper training and recovery conditions	3.10	1.26
4	38	Involvement in other activity	2.94	1.39
5	40	Financial advantages in another profession	2.87	1.37
6	19	Lack of psychology adequate training determined by trainers' lack of interest	2.82	1.34
7	17	Great consumption of psychic energy in sports activities	2.81	1.21
8	20	Decreased motivation for high-performance sports	2.73	1.15
9	21	Tensed relationships with the trainers	2.53	1.41
10	28	Lack of free time and relaxation means	2.53	1.21

Calculated correlations (\*  $p < 0.05$  ; \*\*  $< 0.01$ ) reveal:

-significant positive correlation between sports classification and age (,366\*\*), team-mate conflicts (,375\*\*), disagreements with the club or federation representatives (,544\*\*);

-positive correlation between the competition level and the loaded program (,384\*\*), lack of free time for relaxation (,361\*\*), frustrations induced in sports life (,444\*\*), integration difficulties outside sports environment (,396\*\*), tensed relationships with the trainers (,310\*);

-significant correlation between age variable and frequent travels (,309\*), long training camps(,350\*\*), decreased motivation (,385\*\*), hostile attitude of the public or media (,508\*\*), lack of social support (,354\*\*), weight changes (,408\*\*), sleep quality alterations (,514\*\*);

The type of sports branch (team sport or individual one) allows the subjects different opinions concerning the most illustrative items (FIG. 1 ).

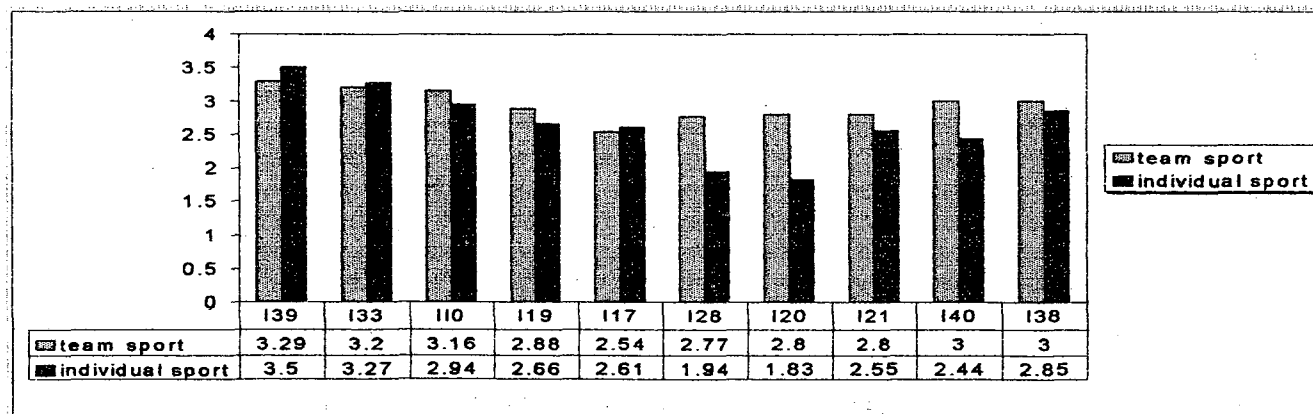


FIG.1 Answers arithmetical means of the most important items, according to the type of sport branch

## DISCUSSION AND CONCLUSIONS

As for the investigated group, the option to become a trainer is at the same time a motivation of retirement, ( most subjects wish to accomplish as trainers what they haven't succeeded in as athletes) and also a result of this retirement, being perceived as the most adequate alternative for a new career. The age doesn't seem to be an important factor in retirement, as 70% of the subjects have only 20.5 years old.

The subjects find difficult being remarkable students and valuable athletes at the same time, because of the deficiencies in organising correlated schedule.

The former team athletes feel to a greater extent the lack of proper training and recovery conditions, adequate psychological training, the effects of conflicts, as compared to the individual sport athletes.

Both groups have close scores in estimating the great psychic energy expand, lack of material compensations and decreased motivation. Other factors implied are : difficult adjustment outside sports and different responsibilities, insufficient social support and regrets, sorrows for an incomplete self-achievement as an athlete.

This study revealed the impact of political, economical and social changes that Romania is passing through, on sport phenomenon in general, and especially on sports retiring.

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# **USE OF PSYCHOLOGICAL TESTING IN COMPETITIVE SPORTS: A CASE-STUDY**

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**Key Words:** case-study, decathlon, Loehr Test, psychological testing, psychological skills, Sports Emotional-Reaction Profile

## **INTRODUCTION**

The sport psychologist's role in the applied field of competitive sports can best be conceptualized as an internal consultant with a variety of job functions involved. One of the specific services provided might include psychological testing. Psychometric instruments are widely used in the applied field although psychological assessment is „one of the most controversial areas of sport psychology“ (Gardner, 1995, p.160). Besides missing information on the psychometric qualities of these instruments (see Schmid & Gubelmann, 1998) inappropriate use and misconceptions about the importance of such testing can mislead the consulting process.

The purpose of this article is to demonstrate how such testing can be incorporated in the process of counseling and consulting with elite athletes. Furthermore, the practicability of two measurements - a German version of the Loehr Test (Loehr, 1988) and the Sports Emotional-Reaction Profile (SERP; Tutko & Tosi, 1976) - is demonstrated. A case study of an elite Swiss decathlete demonstrates on how the results obtained from these psychometric instruments can provide a sound basis for adequate interventions in daily practise such as relaxation and mental rehearsal.

## **METHOD**

Usually, psychological testing is applied in conjunction with interview and behavioral observation. In accordance with Sonnenschein's model (1989) both tests were submitted after an intensive phase of collaboration including interviews and observation. In order to foster valid data, a responsive and trustful relationship between athlete, coach, and psychologist is essential. One of the two tests administered consisted of the Loehr Test, a 42-item test containing 7 subscales (and 6 items per subscale), namely Self-Confidence, Negative Energy, Attention, Visualisation, Motivation, Positive Energy, Control of Attitudes. Similarly, the SERP contains 42 and six subscales: Will to Win, Self-Assertion, Distractability, Control of Arousal, Self-Confidence, Attribution of Responsibility, Competition Planning. The questionnaire, which took approximately 30 minutes to complete, was orally administered. All responses were indicated on 5-point Likert-type scales.

First, the athlete is asked to complete the paper and pencil tests (Loehr Test and SERP). Secondly, the coach is requested to answer both tests (with the same questions) by rating the athlete's attitudes and behavior from the coach's (external) point of view. This procedure helps to create an external validation of the athlete's mental skills shown in training and competition. The scores are then transferred onto a profile sheet for visual inspection (see Figure 1). Furthermore, because of the collaborative nature of the process everyone involved can feel a good deal of ownership in the assessment „which provides an excellent start to consultant-coach-athlete rapport and motivation“ (Hardy, Jones & Gould, 1997, p.289). Additional data from all elite Swiss decathletes facilitate the identification of major discrepancies between current and desired status.

## **A CASE-STUDY - RESULTS AND INTERPRETATION**

“Michael“ decided to get in contact with a sport psychology consultant after having failed in a major event in 1996. When reviewing this specific competition he reported situations of losing focus and concentration. He struggled to get back into the competition but failed. He felt „psyched-out“, not being able to cope in that particularly stressful situation, and paralyzed by the idea that he had choked in one of the most important and prestigious events of his career. After further intensive exploration of the athlete's situation (social environment, training routines, daily schedule, school, etc.) the decision was made to evaluate his mental skills with the psychometric instruments mentioned above.

Figure 1 shows the results of the psychometric testing. The interpretation is divided into three parts: General observation (1), Specific interpretation (2), and Resources for future intervention (3).

A first inspection (1) of the three profiles (athlete, coach, and national decathlon team) reveals two general facts: First: The athlete's scores are fairly congruent with the coach's (perceived) scores. This might lead to the assumption that the coach has empathy - the ability to understand the emotions and attitudes of his athlete, to see Michael's reality as he perceives it. Second, Michael's profile is well above the average score attained by the national decathlon team. According to Loehr's model of interpretation (1988) Michael reaches an advanced mental toughness level ( $\Sigma$  average).

A more specific interpretation of the athlete's ratings (2) shows high scores in key-scales such as Self-Confidence, Motivation and Positive Energy. Moreover, the hypothesis was made that his performance was deteriorating in presence of negative psychic energy in the form of stress. Finally, insufficient energy management (control of arousal) and poor visualization technique were examined.

(3) The diagnosis of the athlete's situation in combination with the results of the psychometric testing provides sound information for a mental skills training including progressive muscle relaxation (PMR), visualisation and mental rehearsal exercises. Therefore, a specific training programme (pole-vault) based on the the Visual Motor Behavior Rehearsal (VMBR, see Suinn, 1994) and Eberspächer's model on Mental Training (1990) had been developed. Additionally, video material was used to optimize intrinsic motivation and to monitor competition planning.

The tailor-made program seemed to work well for Michael. In 1997 and 1998 he was able to improve his personal best performances in the most important and challenging competitions. He reported sustained positive energy and good focus in critical situations due to increased self-awareness and self-confidence. He raised his personal best performance in the pole-vault by 30 centimeters clearing the bar at the height of 5.00 meters. Postinterviews at different stages of training and at the end of the season were essentially used to trace accuracy and effectiveness of the consulting process.

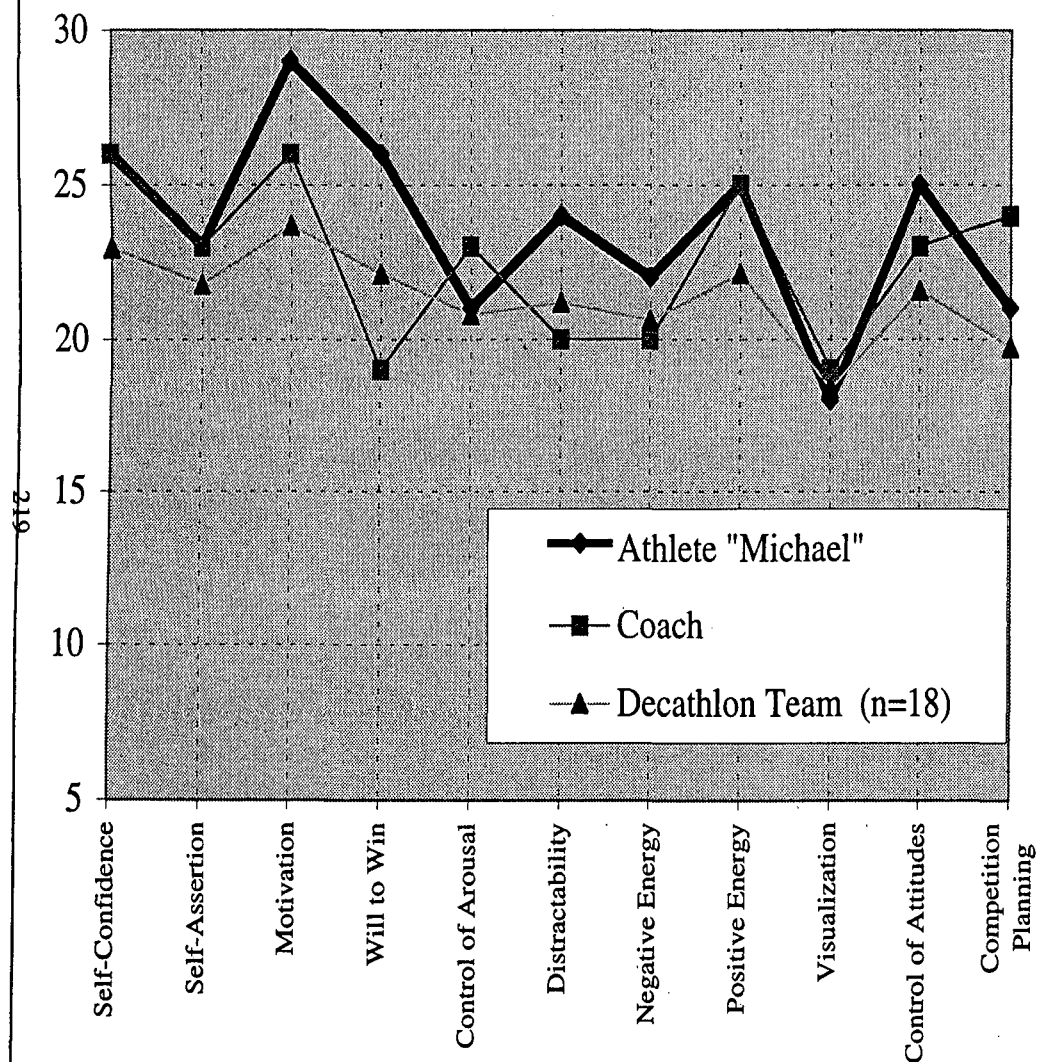
## CONCLUSION

Problem identification and intervention planning are often aided by the use of psychometric instruments. The assumption was made that the two tests (Loehr Test, SERP) were helpful and adequate tools within the consulting process. A large body of experience supports the practicability of these instruments although hardly any information on their respective psychometric qualities have been reported. The case-study presented in this report dealt with the practical implications of packaging psychological skills into an individualized assessment and training system. The psychological skills program used in this context does seem to have a positive impact on the performance enhancement process.

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	Self-Confidence	Self-Assertion	Motivation	Will to Win	Control of Arousal	Distractability	Negative Energy	Positive Energy	Visualization	Control of Attitudes	Competition Planning	Σ Average
Athlete "Michael"	26	23	29	26	21	24	22	25	18	25	21	<b>23.64</b>
Coach	26	23	26	19	23	20	20	25	19	23	24	<b>22.55</b>
Decathlon Team	22.94	21.78	23.67	22.11	20.78	21.17	20.61	22.11	18.39	21.56	19.72	<b>21.35</b>



## Case Study "Michael"

### Mental Toughness: Rationale

#### *Results / Inspection / Interpretation / Intervention*

##### General Observation:

- Level of magnitude
- Comparison athlete - coach
- Comparison athlete - group

##### Specific Interpretation:

- Strength, well-developed mental skills
- Ressources, mental skills to be improved
- Remarks

##### Resources for Future Interventions (Michael):

- Control of Arousal
- Visualization
- Competition Planning

**Figure 1:** A comparison of different mental skill levels: athlete, coach (external perception) and elite Swiss decathletes (n=18)

# UNDERSTANDING DROP OUT IN FEMALE HANDBALL : TEST OF VALLERAND 'S HIERARCHICAL MODEL OF MOTIVATION

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KEY WORDS : Drop out - Sport - Hierarchical model - Female athlete

## INTRODUCTION

Sport drop out represents an important problem that affect thousands of children. Adolescence appears to be a particularly critical stage : It is estimated that 80% of children and adolescents involved in organized sport discontinue involment between the ages of 12 and 17 years (Gould, 1987). Although withdrawal from sport roles is characteristic of both males and females during adolescence, evidence suggests that participation in competitive sport by females decreases more dramatically throughout the adolescent years (Duquin, 1978). Particularly, in female's handball (France), it is estimated that 40% of female between the ages of 16 and 19 years drop out each year (Guillet, 1997).

The purpose of this study was to test the hierarchical model of Vallerand (1997) to explain the phenomenon of withdrawal in female's handball. This motivational model posits that : (1) the individual's behavior can be intrinsically or extrinsically motivated or amotivated; (2) forms of intrinsic motivation lead to persistence more than forms of extrinsic motivation which induce dropout; (3) social agents (or significant others) may influence individuals according as they support individuals' autonomy or control their behavior; (4) but social agents do not affect individuals' motivation directly, the social agents' effects are mediated by individuals' perceptions of competence, autonomy and relatedness.

In this study, drop out was defined as an individual who discontinue handball for voluntary's reasons (and not for involuntary's reasons like an injury).

It was hypothesized that the coach's behavior toward females handball influence their perceptions of competence, relatedness, and autonomy. The more controlling the coach's behavior is, the less positive are females' handball perceptions of competence, relatedness, and autonomy. In turn, the less positive females' handball perceptions are, the lower their levels of self-determined motivation are. Finally, low levels of self-determined motivation are expected to lead females'handball to develop intentions to drop out of handball, which are later acted out.

## METHOD AND PROCEDURE

### Subjects

The sample comprised 336 handball 's females between the ages of 13 and 15 years ( $M=14,07$  years,  $SD = 0,79$  years). Of these participants, 80 were females' handball who drop out and 256 were persistents.

### Questionnaire

The questionnaire was made up of five parts. In the first part of the questionnaire, participants indicate their date of birth, years of handball's experience, their competition's level. The second part of the questionnaire was the French version of the Sport Motivation Scale (SMS ; Pelletier, Vallerand, Fortier, Tuson, Brière, & Blais, 1995) namely L'Echelle de Motivation dans les Sports (EMS ; Brière, Vallerand, Blais & Pelletier, 1995), which assesses females'handball motivation.

In the third part, participants completed (1) a scale that assessed perceptions of their coach's behavior. These scales were adapted from the CBAS (Coaching Behavior Assessment System ; Smith, Smoll, & Curtis, 1979), the CBQ (Coaching Behavior Questionnaire ; Kenow & Williams, 1992), and (2) a scale that assessed the degree to which the team's motivational climate was characterized by mastery and performance goals, it was adapted from the EPCM (Echelle de Motivation du Climat Motivationnel ; Cury, Famose, Biddle, Goudas, Durand, & Sarrazin, 1996).



The fourth part assessed the (1) progress' perception, (2) the autonomy's perception, and (3) the relatedness' perception (ESAS : Echelle du Sentiment d'Appartenance Sociale ; Vallerand & Richer, in press), of the females' participants.

Finally, in the fifth part, participants were asked to complete four items that measured their future sport's intentions.

Responses to these scales were rated on a 7-point Likert scale ranging from *not all in agreement* (1) to *completely in agreement* (7).

### Procedure

In April 1998, at the end of the handball's season 97/98, the questionnaire was sent by mail. Then, in October 1998 at the beginning of the season 98/99, we contacted the French Federation of Handball to establish a list of females' handball who did not re-enroll in any handball club. Also, we send a new questionnaire to the participants who drop out and they indicated the reasons of their withdrawal (involuntary or not).

## RESULTS

### Motivation toward Sport and Behavioral Intentions

A 2 (type of player : dropout vs. Persistent)  $\times$  7 (type of sport motivation) analysis of variance (ANOVA) with repeated measures on the motivation variable was performed on the data. Results revealed a significant main effect for sport motivation,  $F(6, 2004) = 411.58, p < .0001$ . Neuwman-Keuls post hoc analyses revealed that five of the seven motivational subscales yielded significant differences ( $p < .0001$ ). No differences were found between the identified regulation and introjected regulation, and between the intrinsic stimulation and the intrinsic accomplishment. The most important forms of motivation for participants in this sample, in decreasing order, amotivation, external regulation, identified regulation and introjected regulation, intrinsic knowledge, and intrinsic stimulation and intrinsic accomplishment.

Results also revealed a significant Type of Player  $\times$  Motivation interaction,  $F(6, 2004) = 5.33, p < .0001$ . Neuwman-Keuls post hoc analyses indicated that three of the seven motivational scales yielded significant differences ( $p < .001$ ) between the type of player. Results showed that dropout players were significantly less intrinsically motivated to know and to accomplish toward sport (handball) than persistent players. However, drop out players displayed significantly more amotivation than persistent players. Finally, no differences were found between the two types on intrinsic stimulation, identified regulation, introjected regulation and external regulation.

With respect to behavioral intentions, results revealed a main effect for type of player,  $F(1, 330) = 86.49, p < .0001$ . Players who eventually dropped out had greater intentions to drop out of handball than did those who persisted.

### Perceived Sport Progress, Autonomy, and Relatedness

A preliminary multivariate analysis of variance (MANOVA) was conducted to determine whether there was significant type players' differences on the variables of perception of progress, autonomy, and relatedness. Results revealed a significant effect for type of player, Wilk's lambda (4,330) = .95,  $p < .01$ .

Follow-up univariate  $F$  values were employed to investigate this multivariate relationship. The results of the perceived sport progress revealed the presence of a type of players main effect,  $F(1,333) = 4.77, p < .05$ . Results indicated that dropout players perceived themselves as significantly less in progress in handball than persistents players.

Results of the perceived sport autonomy scales also revealed a significant type of player main effect,  $F(1,333) = 13.4, p < .001$ . Results indicated that dropout players reported feelings significantly less autonomous at handball (sport) than persistent players.

Finally, results of the perceived sport relatedness revealed a significant type of player main effect,  $F(1,333) = 8.19, p < .01$ . Results indicated that dropout players perceived themselves as significantly less related at their team than the persistent players.

### Perceived Coaching Behaviors

To test whether perceptions coaching behaviors of the participants would vary as a function of the type of player, a 2 ( type of player : drop out vs. persistent)  $\times$  9 (perceptions of

coaching behaviors) MANOVA was conducted. Results revealed a significant effet for type of player, Wilk's lambda (9, 326) = .94,  $p < .02$ .

Follow-up univariate  $F$  values were employed to investigate this multivariate relationship. Five of the nine perceptions coaching behaviors yielded significant differences. Results indicated that dropout players perceived the coaching behavior less encouraging ( $p = .05$ ), and less quiet than the persistent players ( $p < .01$ ), but dropout players perceived that their coach favoured more some players than the persistent players ( $p < .05$ ). The results revealed also that dropout players perceived the team's motivational climate was characterized by less mastery goals than persistent players ( $p < .05$ ), but dropout players perceived the team's motivational climate was characterized by more performance goals than persistent players ( $p = .05$ ).

## DISCUSSION AND CONCLUSIONS

The purpose of this study was to explain the female's handball drop out toward the hierarchical model of Vallerand. First, results revealed that dropout players had lower levels of intrinsic motivation, but higher levels of amotivation, toward sport (handball) than persistent players. Second, players who eventually dropped out had greater intentions to drop out of handball than did those who persisted. Third, as expected dropout players perceived themselves as being less in progress, autonomous, and related to the team at handball. Finally, dropout players perceived their coach less encouraging, and less quiet than the persistent players, and dropout players perceived their team's motivational climate was characterized by more performance goals than persistents players.

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# **USING AN EXPECTANCY-VALUE PARADIGM IN THE MEASUREMENT OF PHYSICAL SELF PERCEPTIONS**

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## **KEYWORDS**

Physical Self-worth; Measurement; Structural Equation Modelling; Expectancy-Value

## **INTRODUCTION**

Fox and Corbin (1989) have put forward a hierarchical, multidimensional model for conceptualising self-perceptions in the physical domain. The model posits that an overall or global self-esteem (GSE) construct, as hypothesised by Rosenberg (1979), operates as a superordinate governing self-esteem in the physical domain. The physical self-worth (PSW) construct is represented by four subdomains in which individual's report their self-esteem: Sports Competence (SPORT), Physical Condition (COND), Physical Strength (STREN) and Body Attractiveness (BODY) which are related to PSW at the domain level, but not the GSE at the apex. The model has demonstrated utility in studying the organisation of self-esteem in the field of sport and physical activity (Fox, 1990). Further studies have successfully replicated the structure of Physical Self-Perception Profile (PSPP) constructs, the accompanying instrument for quantifying individual's perceptions regarding self-esteem, in adults (Biddle et al., 1993) and children (Hagger, Ashford, & Stambulova, 1998; Whitehead, 1995). Research has also indicated the PSPP variables to be related to involvement (Page, Ashford, Fox, & Biddle, 1993), physical fitness indicators (Whitehead, 1995) and discriminates between high and low exercisers (Biddle et al., 1993). Fox's (1990) model is also useful as it provides a means of discounting less significant subdomains using an importance scale to assign relative importance to give subdomains.

Traditionally the importance scales have been used to discount less important subdomains and calculate discrepancy scores which demonstrate the importance of specific subdomains. However, the importance scores may also be useful in determining the relative importance of each subdomain indicator to its overall factor. The PSPP items represent the overall judgement or expectancy an individual may place on the given subdomain area. Accompanying this is a importance score which assigns importance or value to the given subdomain. This gives rise utilizing an expectancy-value paradigm to assign importance to each item prior to examining the structure of the model and relationships between the constructs. Such an expectancy-value method has been used previously in attitude research by Bagozzi (1984). The present study aims to adopt an expectancy-value paradigm by weighting each item from the PSPP with the importance score from its respective subdomain. These scores will then be used to test the multidimensional and hierarchical integrity of Fox's (1990) model.

## **METHOD AND PROCEDURE**

488 school children aged 12-14 years volunteered to participate in the study. A children's version of the PSPP instrument, the PSPP-C was administered to the children under quiet

classroom conditions. The Perceived Importance Profile for Children (PIP-C) was completed concurrently with the PSPP-C. Raw item scores from the PSPP-C were then multiplied by the PIP-C scores for their respective subdomain. These reweighted scores were used to estimate a confirmatory factor analysis model using the EQS structural equation modeling program (Bentler, 1989). A robust maximum likelihood method was used to estimate the model and standard overall goodness of fit statistics were used to assess the adequacy of the model (CFI, NNFI, SRMSR and  $\chi^2/\text{df}$ ). A higher order structural equation model was also estimated to examine whether a higher order factor representing general PSW would account for the covariances between the factors.

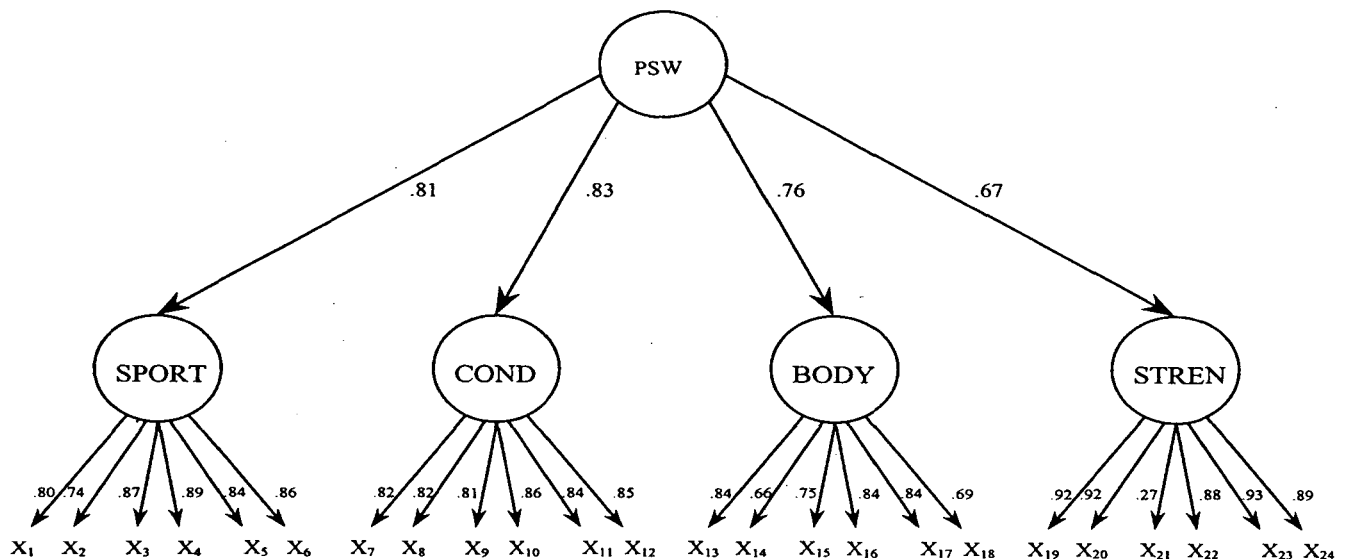
## RESULTS

Estimation of the confirmatory factor analysis and higher order structural equation model resulted in satisfactory overall goodness of fit statistics (Table 1).

**TABLE 1 Goodness of Fit Statistics for CFA and Higher Order Factor Models**

Model	$\chi^2$ (df)	$\chi^2/\text{df}$	CFI	TLI	SRMSR	HTLI
CFA	733.72 (221)	3.32	.95	.94	.002	1.00
Higher order factor	748.14 (222)	3.37	.94	.94	.002	.99

The inclusion of a higher order factor resulted in a significant increase in the  $\chi^2$  value but this had no impact on goodness of fit (as indicated by the incremental fit index), suggesting that a higher order factor could account for the associations between the subdomain factors. An examination of the parameter estimates showed that each importance-reweighted PSPP-C item contributed well to its factor and there were significant parameter estimates between the higher order factor and BODY, COND, STREN and SPORT subdomains (Fig. 1).



**Fig. 1. Path diagram showing structural coefficients between indicators, subdomains and domain level constructs**

## DISCUSSION AND CONCLUSIONS

The present study confirmed the multidimensional, hierarchical structure of physical self-perceptions in children when an expectancy-value paradigm is used to reweight the PSPP-C items using the PIP-C scores. The CFA revealed that only one item from the PSPP-C inventory, the third item for the strength factor, did not make a substantial contribution to its factor and exhibited a low factor loading. This item had the following statement: "When strong muscles are needed, some kids are the first to step forward but other kids are the last to step forward when strong muscles are needed". It is possible that this item did not receive a consistent endorsement across the sample as it reflects a process of offering help as well as measuring self-esteem in the strength domain. This may have confounded the results.

In addition to confirming the factorial validity, the present study also demonstrated that the associations between the sport, condition, body and strength subdomains could be accounted for by a single higher-order factor. This factor was hypothesised to represent the general physical self-worth construct. This provides further evidence in favour of multiple subdomains relating to a single domain-level physical self-esteem construct and that these constructs were arranged hierarchically. The higher-order factor was well endorsed by all four of the subdomain factors.

The present findings have implications for measuring self-esteem in the physical domain and for future research on physical self-perceptions. It is recommended that researchers adopt an expectancy-value paradigm in order to utilise the importance scores as a weighting for self-esteem judgements. Future research on self-esteem can use this method to ensure items from the PSPP-C reflect positive judgements as well as high importance.

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## **THE DEVELOPMENT OF PERFECTIONISM AND THE INFLUENCE OF PARENTS.**

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**KEY WORDS:** Perfectionism, Parental Influence.

There is wide speculation about the origins of perfectionism. Many theorists consider that perfectionism is rooted in parent - child interactions and that it begins to develop in children whose parents are both perfectionistic and demanding (Frost, Lahart & Rosenblate, 1991). Misseldine (1963) reasoned that because perfectionistic parents have a tendency to devalue their own achievements, they also fail to recognize or reinforce the efforts of their children. Through this action, parents implicitly convey the message to their children that their accomplishments are sub-standard, and that they must apply greater effort in order to do better in the future. This implicit communication leaves these children in a state of uncertainty where they never quite know what standards must be achieved in order to receive the full approval of their parents. As a consequence, they are never empowered by their parents to feel a sense of satisfaction with their accomplishments. Misseldine further suggested that children of perfectionistic parents are often subjected to extremely subtle signals which convey messages of disapproval. Parents indicate disappointment with performance while implying that approval will be contingent on future improvement. But because the criteria for improvement are often vague, the children of perfectionistic parents learn to underestimate and devalue any personal accomplishments because they consider that the outcomes are never adequate to fulfil their parents' high expectations.

The importance of the criteria by which parents provide approval was noted by Hamachek (1978) as instrumental in the development of perfectionism. He argued that an environment where a child's performance was met with non-approval, inconsistent approval or conditional approval would encourage the development of perfectionism. An environment where children's' accomplishments were met with non-approval or inconsistent approval would not enable children to understand the criterion standard for good performance. Hamachek argued that under these conditions perfect performance became the most comprehensible criterion for acceptable performance, and therefore this standard was likely to be internalized. Unfortunately, the consequence was that anything less than perfect performance was considered inadequate. Hamachek also argued that when parental approval was perceived to be contingent on performance it encouraged children to place a premium on achievement in order to gain parental affection and self-acceptance. Burns (1980) also considered that parents who provided contingent affection, or who responded to mistakes and failure with anxiety and disappointment would foster the development of perfectionism in their children. This is because the child learns that mistakes and failure are things to be avoided. Similarly, they discover that perhaps the most effective strategy to employ in order to receive parental acceptance and affection is to strive for higher performance levels which by definition ought to contain fewer mistakes.

Hamachek (1978) also considered that children would develop perfectionistic behaviour by modelling their parents. While neurotic perfectionism was considered to develop as a result of modelling the pursuit of excessively high standards in order to gain parental approval, normal perfectionism was thought to develop when children observed that their parents had an intrinsic appreciation of striving to attain these high standards. The child was considered to develop a perspective which was similar to their parents by observing the flexibility in their parents adherence to perfectionistic standards. Clearly, the behaviours emitted by parents will be influential in modelling the various forms of perfectionistic

behaviour. The parental behaviours provide an indication as to how close to perfect children's performance accomplishments must be. Similarly, they indicate the degree to which mistakes are tolerable, and the suitability of the responses when mistakes are made. Moreover, they also provide an indication of the degree to which accomplishments should be considered as a reflection of self-worth (Frost, Lahart & Rosenblate, 1991).

Early theorists (Burns, 1980; Hamachek, 1978; Misseldine, 1963) provided a conceptual explanation of the environment in which perfectionism would begin to flourish. Later researchers have built upon these foundations and attempted to provide some empirical verification of the four key conditions which Barrow and Moore (1983) considered conducive to the development of perfectionism. These are: (1) overtly critical and demanding parents, (2) the indirect and implied criticism of accomplishments by parents (3) an absence of clear achievement standards and (4) the modelling of perfectionistic behaviour by parents. One of the first to empirically examine whether perfectionism was the product of perfectionistic and demanding parents was Frost et al. (1991). In two studies with female undergraduate students, Frost et al. (1991) found that mothers' perfectionism was related to perfectionism in their daughters. This relationship was not observed between fathers and their daughters. This factor was considered to be the result of same sex modelling, and perhaps opens the way for further investigation in the context of sport. Further, it was found that daughters' perfectionism was also related to a perception of harshness on the part of both parents with this factor combining with mothers perfectionism to predict 30% behavioural variance. In a study on the development of perfectionism by Parker (1995), it was found that mothers' perfectionism accounted for 29% perfectionism in daughters and 20% perfectionism in sons. In contrast, fathers' perfectionism accounted for 5% perfectionism in daughters and 11% in sons. In a further study of the antecedents of perfectionism in academically gifted children, Parker and Raffield (1995) failed to find the same strength of relationship between parental perfectionism and perfectionism in their children. They reported that perfectionistic attitudes in parents only accounted for 2% behavioural variance in children's perfectionism scores.

Further evidence that parental practices can contribute to the development of perfectionism was found by Rice, Ashby and Preusser (1996). They noted that mothers' perfectionistic tendencies and overprotective behaviour contributed to the prediction of neurotic perfectionism in children. Furthermore, Rice et al (1996) found that high levels of overprotective behaviour in mothers had a negative impact upon the self-esteem of neurotic perfectionistic children. A similar relationship was found in normal perfectionists with overprotective fathers. Clearly, this finding suggests that pampering children can influence the development of perfectionism in children. Adler (1956) suggested that when children were pampered it accentuated the development of a belief in their incapacities, and they became less able to adapt to a changing environment. With age and the withdrawal of parental protection, the sense of inadequacy was considered to further increase although the perceived inferiority could be overcome by striving to succeed. Clearly, in the context of sport where parental involvement is so extensive, similar overprotective behaviours in formative years may influence the development of perfectionism. Further consideration should also be given to the achievement goals endorsed by parents, and how the transmission of specific achievement values might also encourage debilitating levels of neurotic perfectionism. A recent study by Ablard and Parker (1997) found that children whose parents typically endorsed performance goals where achievement was considered in normative or comparative terms were more likely to exhibit dysfunctional perfectionism than those endorsing learning goals where achievement was considered in self-referenced terms. This led to children reporting significantly higher values with respect to concerns about mistakes, doubts about action, parental expectation and parental criticism, all considered to be dimensions of neurotic perfectionism.

Although the findings from empirical research on the development of perfectionism have identified that perfectionistic parents seem to have perfectionistic children, the strength of the association is relatively weak. Indeed, Frost et al (1991) suggested that it is unknown whether perfectionistic parents do set excessively high standards for their children to achieve. Similarly, it is unknown whether perfectionistic children actually perceive that their parents set high standards, or further, whether they perceive that their parents are highly critical of their achievements. The fact that perfectionism has been identified as a maladaptive influence on achievement cognition, affect and behaviour in the context of sport, and that direct parental involvement is extensive would seem to suggest that this specific context may be ideally suited to further research on the development of this construct.

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## **PERFECTIONISM AND ITS RELATIONSHIP WITH ACHIEVEMENT COGNITION, AFFECT AND BEHAVIOUR.**

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**KEY WORDS:** Perfectionism, Cognition, Affect, Behaviour.

Empirical research which has attempted to determine how perfectionism impacts upon achievement cognitions, affect and behaviour has predominantly focused upon academic contexts. Because many of the conceptual developments in sport motivation research also have their origins in educational psychology, extrapolating from the findings of educational research on perfectionism would seem to be an appropriate strategy if we are to begin to explain how perfectionistic thinking impacts upon achievement behaviour in sport. Therefore, the present paper will attempt to identify some of the more consistent relationships that have been found between perfectionism and achievement cognition, affect and behaviour in educational contexts in order to highlight the need for similar systematic enquiry in the context of sport.

### Perfectionism and Maladaptive Achievement Strategies

Although some researchers (eg. Hamachek, 1978) have reported that normal perfectionism or self-oriented perfectionism might lead to positive achievement striving, most have focused upon how neurotic perfectionism and socially prescribed perfectionism can have a destructive influence on achievement behaviour and affect. Clearly, these findings not only have implications for immediate performance and affective responses, but they enable us to make predictions about both continuing motivation and achievement. Research by Arthur and Hayward (1995) verified this in a sample of college students, finding that over the course of a semester socially prescribed perfectionism was associated with symptoms of anxiety, depression and lower academic performance. The researchers argued that the lower academic performance which these students experienced resulted from their energy being expended on coping with debilitating anxiety and disappointment over a perceived failure to perform rather than on direct management of the academic demands. It appears, therefore, that such a preoccupation is likely to have a detrimental impact upon meta-cognitive skills such as planning, monitoring and self-regulation of learning strategies which will ultimately lead to impaired performance. Pacht (1984) has attempted to explain similar impaired performance in perfectionists by suggesting that because neurotic or socially prescribed perfectionists have an intense fear of failure, many of their coping behaviours focus on avoidance strategies, and while these may bring about short term relief from performance related pressures, they are likely to be maladaptive for long term achievement.

Some of the maladaptive strategies adopted by neurotic or socially prescribed perfectionists can clearly be observed in the behaviour of perfectionistic athletes. Although occasionally observable in competitive contexts, it is much more likely that such strategies will be more clearly evident during practice. Adderholt-Elliott (1989) argued that such perfectionistic thinking can have a paralyzing effect on the performer, in that it doesn't encourage the taking of risks. The consuming desire not to make mistakes frequently results in perfectionists resorting to inertia. For example, one might observe athletes who prefer not to work on skills that are clearly in need of development for fear of demonstrating incompetence. Such behaviour is often labelled as procrastination. In their research on this particular coping strategy, Flett, Hewitt and Martin (1995) argued that procrastination tends to be exhibited predominantly by those who aim for exceedingly high standards, but lack the necessary intrinsic motivation and self-determination to strive to reach their desired goals. Consistent with this theorizing, Flett, Blankenstein, Hewitt and Koledin (1992) found that socially prescribed perfectionism was

positively associated with procrastination in college students. Flett et al (1995) argued that because socially prescribed perfectionism is also associated with neuroticism, those individuals who are high in socially prescribed perfectionism often feel that they lack the requisite problem solving skills, and consequently they resort to maladaptive coping strategies such as procrastination. Another maladaptive strategy to which socially prescribed perfectionists resort is self-handicapping. Hobden and Pliner (1995) found that after performing a cognitive task and receiving feedback that led them to question their ability to succeed on a further trial, socially prescribed perfectionists chose to engage in behaviours that would clearly hinder subsequent performance when the outcome was to be made public. In contrast, when the performance outcome was not perceived as open to public scrutiny, socially prescribed perfectionists did not engage in self-handicapping future performance. The occurrence of these maladaptive strategies is highly likely in sporting contexts where performance is open to public scrutiny.

Socially prescribed perfectionism has also been found to impact negatively upon problem solving skills (Flett, Hewitt, Blankstein, Solnick & Von Brunschot, 1996). Clearly, this has important implications for athletes as research on coping in sport has identified that problem focused coping (Folkman, 1984) is an adaptive strategy for managing performance related anxiety (Crocker, 1992). Flett et al. (1995) found that socially prescribed perfectionism was associated with impaired problem solving ability as measured by the problem solving skills scale (D'Zurilla & Nezu, 1990). More specifically, socially prescribed perfectionism was associated with a negative problem solving orientation, which included cognitive, emotional and behavioural reactions when problem solving skills were required. Individuals who were dispositionally high in socially prescribed perfectionism had negative beliefs about their ability to solve problems, tended to respond with emotional distress, and chose to utilize avoidance rather than approach strategies. In sum, high levels of socially prescribed perfectionism appear to undermine problem solving efficacy and lead to individuals making minimalist attempts to engage in active problem solving behaviour. Such behaviour is contrary to that required for optimal skill development and performance.

When mistakes are made during performance, it appears that neurotic or socially prescribed perfectionists experience more intense and more negative reactions than those who are lower in these forms of perfectionism. Frost, Trepanier, Brown, Heimberg, Juster, Makris and Leung (1997) verified this in a sample of female undergraduate students who were asked to record and monitor their mistakes over a five day period. They found that those deemed high on the neurotic perfectionistic dimension of concern over mistakes reported higher levels of rumination about their mistakes, considered their mistakes to be more serious and reported more concern about others reactions to their mistakes when compared with those who were low in this dimension of perfectionism.

#### Perfectionism and Performance Related Affect

The intensity of the maladaptive cognitions experienced by perfectionists is matched by similarly intense levels of negative affect. A number of empirical studies have confirmed that neurotic or socially prescribed perfectionists experience higher levels of negative affect in achievement contexts, especially when the situation is perceived to be high in evaluative threat. Flett, Hewitt, Endler and Tassone, (1995) reported that in a sample of college students performing on an anagram task socially prescribed perfectionism was positively related to perceptions of threat as well as both cognitive and autonomic state anxiety, but only when performance was perceived as having the potential to be evaluated. Under conditions where students perceived little evaluation potential, socially prescribed perfectionism was unrelated to measures of state anxiety. As there is considerable potential for evaluation in most sporting contexts, elevated state anxiety is likely in socially prescribed perfectionists.

A further study by Frost and Marten (1990) examined the relationship between perfectionism and achievement related affect in a sample of college students performing an academic writing task. When evaluation of the writing task was made highly salient, those high in overall perfectionism experienced higher levels of negative affect both before and during performance of the task. In addition, the quality of written work was judged to be lower than students who were low in overall perfectionism. Frost and Marten (1990) concluded that, while negative affect appears to be mediated by a differential sensitivity to threat, overall performance quality on the writing task may have been mediated by skill level. They proposed that because perfectionists engage in failure avoidance strategies, frequently procrastinate, and often fail to seek external advice on their work, this leads to a skill deficit. Frost and Marten indicated that it may be the case that because perfectionists don't practice in a systematic and consistent fashion, and don't benefit from external feedback, skill deficiencies become apparent between those high in neurotic or socially prescribed perfectionism and those who simply engage in adaptive achievement striving. While there is ample evidence to support such a contention in academic settings (Flett, Hewitt, Endler and Tassone, 1995; Frost and Marten 1990), such a contention still remains to be tested in sport. Research exploring the relationships between various dimensions of perfectionism, achievement related cognitions, affective responses and achievement behaviour is now beginning to emerge in sport psychology.

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# THE INFLUENCE OF PERFECTIONISM ON STATE ANXIETY IN PROSPECTIVE PHYSICAL EDUCATION TEACHERS

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## INTRODUCTION

Recent research by Frost and Marten (1990) and by Flett, Hewitt, Endler and Tassone (1995) has suggested that perfectionism, or more specifically socially prescribed perfectionism will predispose individuals to experience elevated levels of state anxiety, particularly when the situation is perceived to be high in evaluative threat. Frost and Marten (1990) were the first to test this contention in a laboratory study involving a sample of college undergraduate students. They selected participants who were found to score in the upper and lower quartiles on the Multidimensional Perfectionism Scale (Frost, Marten, Lahart & Rosenblate, 1990), and had them perform a writing task under conditions of low and high evaluative threat. Frost and Marten (1990) found that, in general, those who were high in perfectionism reported higher levels of negative affect than those low in perfectionism both before and during task performance. However, under conditions of low evaluative threat there were no reported differences in negative affect between high and low perfectionists. Only when evaluative threat was perceived did the high perfectionists report significantly higher levels of negative affect. This elevated level of negative affect was reported both before and during performance of the writing task. Because Frost and Marten (1990) did not examine the effects of the different dimensions of perfectionism on participants affective responses, Flett et al. (1995) conducted a follow up study. This was an attempt to examine the influence of self-oriented, socially prescribed and other oriented perfectionism on dimensions of state anxiety while performing a laboratory task under conditions of high and low evaluative threat. Specifically, participants were asked to undertake an anagram task under two sets of instructions designed to foster high or low ego involvement. The instructions invoking high ego involvement suggested that performance on the anagram test was predictive of success and ability in post-graduate entrance testing. In contrast, the instructions invoking low ego involvement suggested that the test was in its initial stages of development and therefore it was uncertain whether scores were predictive of any future criterion. The correlational results indicated that there was no relationship found between any dimension of perfectionism and state anxiety under conditions of low ego involvement. However, under high ego involvement the results indicated that socially prescribed perfectionism was positively related to both cognitive and autonomic dimensions of state anxiety. Both of these empirical investigations utilized contrived tasks conducted in laboratory settings. To date, no study has attempted to examine the influence of the different dimensions of perfectionism on state anxiety in an ecologically valid context. The event chosen in the following study was an interview for entry onto a university physical education programme. It was considered that lower levels of evaluative threat would be perceived 10 days prior to the interview when compared to the threat perceived on the morning of the interview. Thus, the present study attempted to utilize a naturally occurring event to determine the influence of multidimensional perfectionism on state anxiety under conditions of differing evaluative threat.

## METHOD AND PROCEDURE

The participants for this investigation were 365 students (Mean age = 17) attending an interview for acceptance onto a B. Ed. Physical Education degree at a University in the South of England. Two weeks before the interview, the participants were sent a package in the mail which included informed consent, and a questionnaire to measure multidimensional perfectionism (MPS; Hewitt & Flett, 1991),

perceived threat (EMAS-P; Endler, Edwards & Vitelli, 1991), multidimensional state anxiety (EMAS-S; Endler, Edwards & Vitelli, 1991), state self-esteem (Heatherton & Polivy 1991) and general self esteem (Rosenberg, 1965). The participants were asked to complete this questionnaire within ten days of the interview and return it to the primary investigator. On arrival for the interview, the participants were asked to complete a second questionnaire to measure perceived threat (EMAS-P; Endler, Edwards & Vitelli, 1991), multidimensional state anxiety (EMAS-S; Endler, Edwards & Vitelli, 1991) and state self-esteem (Heatherton & Polivy 1991). The participants were then required to undertake a motor skills assessment, a written assessment and a verbal communication assessment as part of the interview procedure.

## RESULTS

Consistent with the research strategy employed by Flett et al (1995) the bivariate relationship between the two dimensions of perfectionism, threat and multidimensional state anxiety were examined on two occasions. The first, at ten days prior to the interview, and the second immediately prior to the interview. The results are reported in tables 1 and 2.

**TABLE 1. Correlation between dimensions of perfectionism, threat and multidimensional state anxiety 10 days prior to performance.**

	SSP	SOP	T	CA	AA
Socially Prescribed Perfectionism (SSP)	-	.10	-.06	-.17*	-.06
Self-Oriented Perfectionism (SOP)	-	-	.04	.10*	.11*
Threat (T)	-	-	-	.40*	.37*
Cognitive Anxiety (CA)	-	-	-	-	.70*
Autonomic Anxiety (AA)	-	-	-	-	-

\* Sig at  $p < .05$

**TABLE 2. Correlation between dimensions of perfectionism, threat and multidimensional state anxiety immediately prior to performance.**

	SSP	SOP	T	CA	AA
Socially Prescribed Perfectionism (SSP)	-	.10	-.09	-.17*	-.08
Self-Oriented Perfectionism (SOP)	-	-	-.01	.07	.07
Threat (T)	-	-	-	.53*	.44*
Cognitive Anxiety (CA)	-	-	-	-	.79*
Autonomic Anxiety (AA)	-	-	-	-	-

\* Sig at  $p < .05$

Two moderated hierarchical regression analyses were conducted in order to examine the prediction of cognitive anxiety ten days prior to the interview, and immediately before the interview took place. Threat, socially prescribed perfectionism and self-oriented perfectionism were first entered into each regression equation, followed by the interaction terms between the dimensions of perfectionism and threat. This was to determine if threat moderated the relationship between dimensions of perfectionism and cognitive worry. The results of the two regression analyses can be observed in table 3. Only the significant predictors are reported. B values are also reported as the data have been centred.

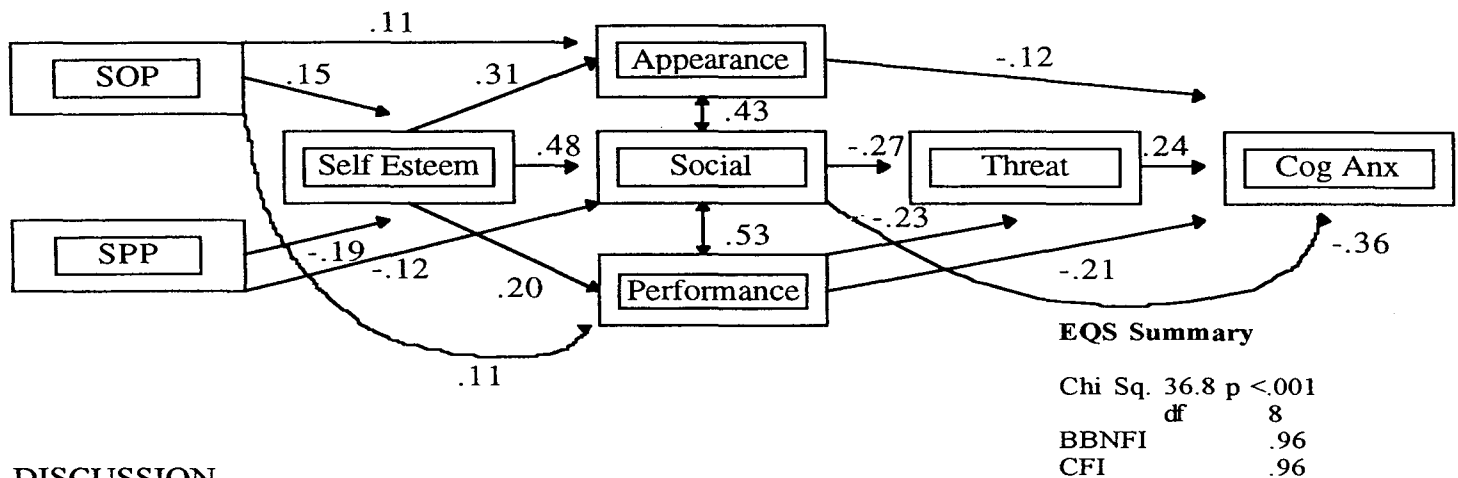
**TABLE 3. Regression of multidimensional perfectionism, threat and interaction terms on cognitive anxiety 10 days prior to interview.**

	R <sup>2</sup> .	B	T	Sig	T	R <sup>2</sup> .	B	T	Sig	T
	.19*					.31*				
Socially Prescribed Perfectionism (SSP)		-.11	-3.4	.01			-.09	-2.9	.01	
Self-Oriented Perfectionism (SOP)		.07	2.3	.05			.06	2.2	.05	
Threat (T)		2.45	7.5	.001			3.7	11.4	.01	

\* Sig at  $p < .01$

A further path analysis was conducted to determine the influence of perfectionism and various self-esteem measures on cognitive anxiety prior to the interview. The results are reported in Figure 1.

**FIGURE 1. Path Analysis showing the prediction of Cognitive Anxiety Immediately Prior to Interview**



## DISCUSSION

The results of the present investigation demonstrate only partial support for the contention that socially prescribed perfectionism predicts state anxiety under conditions of evaluative threat. While the findings from the bivariate correlational analyses and the regression analyses indicated that socially prescribed perfectionism was weakly related to cognitive anxiety prior to performance, an examination of the path model suggests that the relationship between multidimensional perfectionism and state anxiety is more complex than has been suggested previously. The present findings suggest that while multidimensional perfectionism influences both perceived threat and cognitive anxiety in the predicted direction, its relationship with cognitive anxiety is mediated by both general and state self-esteem and the perceived threat experienced by the candidate prior to the interview.

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# PERFECTIONISM: THE CONSTRUCT, ITS MEASUREMENT, AND ITS POTENTIAL FOR INFLUENCING ADAPTIVE AND MALADAPTIVE ACHIEVEMENT STRIVING.

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**KEY WORDS:** Perfectionism, Measurement, Achievement Motivation.

## Adaptive and Maladaptive Achievement Striving

According to many social cognitive perspectives on motivation, striving to reach personally challenging goals is a quality that is reflective of adaptive achievement behaviour (Duda, 1993; Roberts, 1992). While the majority of individuals appear to respond most effectively to goals which are both challenging and flexible, it appears that some individuals are highly motivated to achieve standards which range from extremely difficult to near impossible (Weinberg, Bruya, Jackson & Garland, 1987). Although striving to achieve such excessively difficult standards may result in some beneficial performance effects (Locke & Latham, 1990), the long term psychological impact of such behaviour is far less clear. For some individuals, the constant pursuit of such standards might still be described as adaptive achievement behaviour as long as they are able to derive intrinsic pleasure from their goal striving. However, when individuals are unable to derive intrinsic pleasure from their achievement behaviour, striving for such goals may become psychologically debilitating (Burns, 1980). This intense achievement striving appears to become dysfunctional not simply because the criteria for defining successful achievement are inherently difficult, but because success and failure are defined in rigid terms and require either the attainment of some external standard of perfection, or the meeting of some internal representation of ideal performance. Moreover, because performance against these rigid standards is the primary criterion for the evaluation of self-worth, the self-esteem of these individuals remains vulnerable despite their constant striving to achieve. Their intense efforts are often self-defeating because they are riddled with self-doubt about their capabilities. No performance ever appears to be satisfactory. These individuals are subject to intense self-scrutiny and perceived criticism from others. Any perceived failure to meet requisite standards has a detrimental impact upon self-worth (Blatt, 1995).

## The Construct of Perfectionism

The term used by clinical and counselling psychologists to describe this excessive achievement striving is perfectionism (Blatt, 1995; Burns, 1980; Pacht, 1984). The concept of perfectionism was originally defined by Hamachek (1978) and was considered to have two forms. The first was normal perfectionism, and this described individuals who set high standards of achievement and who derived pleasure from doing something well. It was considered to be a non-pathological form of achievement motivation through which individuals displayed a tendency toward self-actualization. The second was neurotic perfectionism, and this described individuals who were unable to experience pleasure as a result of their efforts because they never considered that their accomplishments were adequate. Frequently, these individuals were driven by an intense desire to avoid perceived failure. While Hamachek initially considered perfectionism to have a positive influence on achievement motivation (Hamachek, 1978), more recent researchers have deemed it a pervasive neurotic style with the potential to inhibit achievement (Hewitt, & Flett, 1991). Indeed, Burns (1980) described it as the compulsive and unrelenting pursuit of impossible goals where self-worth is defined by productivity and accomplishment. Similarly, Pacht (1984) viewed it as an inherently debilitating pursuit of the unattainable which maintains people in a state of turmoil and leads to numerous psychological difficulties. Much of the early work on perfectionism was characterized by attempts to operationally

define the construct from clinical case studies and anecdotal reports (Parker & Adkins, 1995). Further conceptual and empirical developments were hindered by the absence of a satisfactory measurement technology.

### The Measurement of Perfectionism

The development of psychometrically sound instrumentation in the early 1990's led to considerable advances in research. Although Burns (1980) originally considered perfectionism to be a uni-dimensional construct, more recent psychometric developments reveal that perfectionism is multi-dimensional. Two groups of researchers developed and validated multi-dimensional instruments. Frost, Marten, Lahart and Rosenblate (1990) developed the Multidimensional Perfectionism Scale (F-MPS) which contains six sub-scales that have a strong intra-personal focus. The sub-scales measure personal concerns over making mistakes, high personal standards, a perception of high parental expectations, a perception of a high degree of parental criticism, doubts about the quality of one's actions, and a preference for precision, order and organization. Both the high personal standards and the need for order and organization sub-scales clearly reflect adaptive facets of achievement striving and are synonymous with Hamachek's (1978) concept of normal perfectionism. The other four subscales reflect components of perfectionism which may be considered maladaptive in terms of achievement striving and thus closely represent the construct of neurotic perfectionism outlined by Hamachek.

At the same time Frost and his colleagues were validating the F-MPS, Hewitt and Flett (1991) were validating their Multidimensional Perfectionism Scale (H-MPS). This instrument has three subscales and reflects both the intrapersonal and interpersonal nature of the construct (Parker & Adkins, 1995). The three sub-scales measure self-oriented perfectionism, socially prescribed perfectionism and other oriented perfectionism. Self-oriented perfectionism is considered to have the potential for producing adaptive achievement behaviour although it reflects an active striving to be flawless. Those scoring high on the scale set themselves unrealistically high standards, undertake intense self-scrutiny, and lack the flexibility to accept flaws, faults or failure (Hewitt & Flett, 1991). In contrast, socially prescribed perfectionism is considered to have the potential for producing maladaptive achievement behaviour as it reflects a belief that others impose unrealistic expectations and achievement standards, and that these must be met in order to experience approval and acceptance (Hewitt & Flett, 1991). Those who score high on this scale are likely to experience maladaptive achievement cognitions, affect and behaviour because these unrealistically high standards are perceived as being imposed by external sources over which one perceives little control. The third component of perfectionism is termed other oriented perfectionism. It reflects a tendency to demand that others meet unrealistically high standards and an inclination to stringently evaluate the performance of others (Hewitt & Flett, 1991). The construct is considered to be similar to self-oriented perfectionism, although the perfectionistic standards are directed toward significant others. Hewitt and Flett suggested that those who score high on this scale will often tend to attribute blame for failures outwards, show a characteristic lack of trust and occasionally harbour hostility toward others.

### The Debilitating Influence of Socially Prescribed and Neurotic Perfectionism

Empirical investigations utilizing both multidimensional measures of perfectionism (F-MPS & H-MPS) appear to confirm Hamachek's (1978) original contention that perfectionism is associated with both adaptive and maladaptive functioning (Blatt, 1995). Self-oriented perfectionism, high personal standards and a need for order and organization have all been linked with adaptive achievement striving. Socially prescribed perfectionism, a concern over mistakes, high parental expectations and criticism and doubts about action have been associated with more pathological consequences (Blatt, 1995). Specifically, socially prescribed perfectionism and elements of neurotic perfectionism have been linked with pathological self-criticism, maladaptive cognitions and negative affective responses to achievement



outcomes (Bergner, 1995). These include feelings of failure, guilt, procrastination, shame, and low self-esteem (Hewitt, & Flett, 1991). These same dimensions were also associated with more severe conditions such as anxiety (Flett, Hewitt, & Dyck, 1989; Frost & Marten, 1990), depression, (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt, & Flett, 1991), eating disorders (Lassle, Kittl, Fichter, & Pirke, 1988; Striegel-Moore, McAvay, & Rodin, 1986), alcoholism (Nerviano & Gross, 1983), suicide potential (Hewitt, Flett, & Turnbull-Donovan, 1992), and other serious personality disorders (Hewitt, & Flett, 1991). While it is clear that dysfunctional behaviour can result from socially prescribed or neurotic perfectionism, comparatively little is known about its development and the relationship between perfectionism and achievement related cognitions, affect and behaviour in achievement contexts such as education and sport. It is to these issues that we now turn.

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## **SPORTS-SPECIFIC EMOTION-MOTIVATIONAL PROFILING: AN INDIVIDUALISED ASSESSMENT PROGRAMME**

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**KEY WORDS:** emotion, motivation, profiling, sports-specific, metaphors, IZOF model

### INTRODUCTION

Predicted and consistent excellency based on self-regulation of optimal states prior to, during, and after performance is one of the crucial psychological factors in competitive (elite) sports. Thus theory-based diagnostic, prediction, monitoring, and interventions are the key factors enhancing individual (and team) performance. Historically, however, most scales used to assess, for instance, pre-competition anxiety, were initially borrowed from non-sport settings (educational, clinical, organizational). Concerns about the lack of sports-specific scales have been expressed in sport psychology and early attempts to develop such instruments focused mainly on their psychometric characteristics. Recently, more emphasis on individual-oriented and multidimensional procedures was advocated (Butler & Hardy, 1996; Gould & Tuffey, 1996; Hanin, 1978, 1997; Jones, 1995; Martens, et al, 1990; Vanden Auweelle, 1997). Individual-oriented focus in the assessment of performance-related states seems particularly relevant to overcome nomothetic orientations and a negative bias predominant in the main stream and sport psychology during the last decades.

This presentation will focus on conceptual, methodological, and applied issues related to in sport-specific individualized profiling of situational emotions and motivations. Emotion-motivational profiling is based on the individual zones of optimal functioning (IZOF) model as a framework for the systematic description, prediction, and monitoring of task-related subjective experiences affecting an athlete's ability to perform consistently up to her or his potential. The method, initially tested empirically in the assessment of precompetition anxiety and positive and negative emotions, is now extended to situational motivations as another important component of performance-related psychobiosocial states (Hanin, 1997).

### CONCEPTIONAL CONSIDERATIONS

#### Emotions, Motivations, and Psychobiosocial States

The IZOF model assumes that performance-related situational subjective experiences can be described systematically along five basic dimensions including form, content, intensity, time, and context. Performance psychobiosocial states can be manifested and measured in seven forms of total human functioning that are theoretically and empirically substantiated. These include cognitive, affective, motivational, bodily-somatic, psychomotor, performance-operational, and communicative functioning. Therefore, situational emotion and motivation are conceptualized as two basic modalities (forms) of the psychobiosocial state.

#### The Content of Emotions and Motivations

As a framework to conceptualize the content of emotion-motivation experienced by athletes, a two-factor categorization is proposed. In the case of emotion, it is a hedonic tone (positive-negative) and functional impact (optimal-dysfunctional). Four global emotion categories are

derived from interaction of these two factors: optimal-positive, optimal-negative, dysfunctional-positive, dysfunctional negative. Furthermore, individually relevant content of emotions within these four categories is identified via athlete-generated items and thus is substantiated empirically (Hanin, 1997). These theoretical assumptions extend the general ideas about the structure of mood and the importance of assessing positivity and negativity as separate dimensions of affect (Watson and Clark, 1984; Watson, Clark, and Tellegen, 1988; Zenon, Tellegen, 1982).

The categorization of motivation content still presents a big concern in sports and main stream psychology (Pelletier, et al., 1995; Vallerand & Fortier, 1998; Vallerand 1997). As a first approximation, it is proposed to categorize situational motivation content based on two factors: task-relatedness (approach-avoidance) and functional impact (optimal-dysfunctional). Approach is an active involvement (task-in) or a positive motivation; avoidance is an active withdrawal (task-off) or a negative motivation. From the interaction of these two factors four global motivation categories are derived: optimal-approach (effective/task-in); optimal-avoidance (effective/task-off), dysfunctional-approach (ineffective/task-in); dysfunctional-avoidance (ineffective/task-off). Furthermore, individually relevant content of situational motivations within these 4 categories is identified via athlete-generated items to empirically test the validity of this classification.

## METHODS AND PROCEDURE

There are at least three options in the assessment of individually optimal and dysfunctional emotions and motivations. These include (a) an individual-oriented use of standardized mood scales, (b) individualised emotion-motivation profiles, and (c) metaphoric descriptions.

### Idiographic Use of the Standardized Mood Scales

Several psychometric scales were used in idiographic studies with individualized and context specific instructions. However, the content relevancy of several psychometrically valid group-oriented scales has been questioned recently (Hanin, 1997). Specifically, it was found that the content of researcher-generated items in selected standardized scales (STAI, POMS, PANAS, CSAI-2) is in 80-85 % of cases different from emotions really experienced by athletes (Syrjä & Hanin, 1997; Hanin, Jokela, & Syrjä, 1998). In other words, individually relevant content is often not tapped by the group-oriented scales and, therefore, a need to develop mood scales with items covering individually relevant content is indicated.

### Developing Individualized Emotion-Motivation Profiles

Emotion-motivational profiling (complete assessment programme) includes the following steps: (1) identify individually most successful and poor competitions; (2) identify helpful, optimal emotion-motivations; (3) identify harmful, dysfunctional emotion-motivations; (4) establish current ("right now") intensity for each item in the emotion-motivation profile using the Borg's CR-10 scale; (5) establish optimal intensity level of emotion-motivations for successful competition (pre- and mid-performance); (6) establish dysfunctional intensity level of emotion-motivation for poor competitions (pre- and mid-performance); (7) identify the optimal intensity zones using emotion-motivation profile (repeated recalls); (8) validate and refine emotion-motivation profiles in a series of current (real-time) assessments prior to and post performance (intraindividual alphas); (9) monitor the dynamics of emotion-motivation intensity in competitions and practices; (10) develop a short form of emotion-motivation

profiles (three most important items in each category); (11) identify trigger items to use during performances.

Intraindividual reliability (alphas) of individualised scales and their accuracy in prediction and recalls in Olympic level Finnish soccer players (Hanin & Syrjä, 1996; Syrjä, 1998) and top Finnish orienteers (Hanin & Salmi, in preparation) have been established in both competitions and practices.

#### Metaphoric Description of Performance-Related States

An important addition to the detailed emotion-motivational profiling for description of pre-, mid-, and post performance states in successful and unsuccessful competitions is the use of metaphors (Hanin, 1998; Hanin & Lukkarila, 1998 in preparation; Hanin & Stambulova, 1998 in preparation). In contrast to item-by-item detailed emotion-motivation profiling, metaphoric images ("a wild horse", "a lion", "a fox") are holistic descriptors of performance-related states integrating different action tendencies and reflecting an athlete's successful and unsuccessful performance patterns (pre-, mid-, and post-task execution). Moreover, preliminary findings suggest that metaphors are helpful in generating idiosyncratic emotion and motivation items and can also function as immediate triggers of effective action patterns in specific situations.

### CONCLUSIONS

As a result of these developments, a new perspective integrating idiographic and nomothetic approaches is emerging (Hanin, 1998 in press; Hanin, Jokela, & Syrjä, 1998; Syrjä & Hanin, 1997). Methodologically, it is suggested that by combining idiographic and nomothetic approaches it is possible to generate a more task- and individual-relevant pool of items describing performance-related emotions and motivations in different sports. From applied perspective, it is also important to identify action-oriented descriptors that can be used in interventions and self-regulation of psychobiosocial states. More research is needed to address sports-specific assessment issues by examining separate and interaction effects of emotions, motivations and other modalities of an athlete's state in more accurate prediction and control of individual and team performance. Metaphoric descriptions combined with the individualised emotion-motivational profiling seems like a promising avenue to explore in the future.

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