The Psychology of Young Elite Athletes

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Introduction to the Symposium

The investigation of the psychological skills in young elite athletes is an underexplored area in Sport Psychology.

Searching the SPORTDiscus with the keywords elite and than connecting it with the Boolean operator "and" to "young or junior" words, resulted in:

- \( Ti (\text{psychol* and (young or junior) and elite}) = 12 \)
- \( Ti (\text{psychol* and elite}) = 187 \)
Introduction to the Symposium

In 2002, the Hungarian government has established the "Heracles" sport talent care programme. The aim of the programme is to identify, test, select, and manage talented young athletes between 13-23 years of age whose chances to participate in future Olympic events are realistic.

Regular sport-specific psychological, anthropometric and physiological testing is part of the programme to which youngsters and their parents agree prior to the offer of acceptance into the programme.
Introduction to the Symposium

Our research team has conducted a series of studies with young elite athletes - mainly with soccer players in the U13 - U17 national teams - to examine various psychological skills related to sport. In the current symposium four of these studies will be presented.
1. This is a within-participants inquiry, investigating the psychological changes that occur over one year in elite junior soccer players.

2. The study examines extraversion and neuroticism, and their link to sport-related psychological skills in young athletes.

3. The inquiry compares sports-related psychological skills in five junior age groups.

4. The study explores the primary reason for career termination among young elite athletes.
Psychological changes in young elite soccer players: A one year follow-up study

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Co-authors and collaborators:
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Adolescence is characterized by several significant psychological changes (development or maturation) as postulated by several theories.

1. Numerous psychological changes, resulting from sport-participation, such as skill acquisition, self-concept, experience - in addition to maturation - may be expected to occur in young elite athletes.

2. The motivations and goals of young athletes may often conflict with those of adult stakeholders and dynamically change over time.

3. Youth whose training follows the professional model often cannot keep up with the high expectations and excessive demands.
There is a dynamic interaction between the natural changes due to maturation and sport-participation-related psychological growth.

Being aware of the changes that take place in young athletes is essential in devising suitable training programs, dealing with the problems of the athlete, and addressing their needs and motivations in sport.
Objectives

To examine changes over a period of one year in a set of sport-participation-related psychological variables in young elite athletes taking part in a team sport.
1. In this study 46 young male soccer players - born in 1996 - were tested twice, one year apart.

2. They participated in an early summer national training camp where the national team of the corresponding age group was selected.

3. The athletes were tested in 2009 and again in 2010.
Ten dependent measures were obtained: pre-competition anxiety, task- and ego-orientation, four measures of emotional intelligence (EQ), amotivation, intrinsic motivation, and extrinsic motivation.
1. Sport Competition Anxiety Test (SCAT – Martens, Vealey, & Burton, 1990)
3. Wong and Law Emotional Intelligence Scale (WLEIS – Wong & Law, 2002),
4. Sport Motivation Scale (SMS – Pelletier et al., 1995)
**Procedure**

- Athletes were tested twice, under the same condition in the same place, one year apart.
- They completed the questionnaires jointly in a large conference room under supervision.
- Talking or interacting was prohibited, both oral and written instructions were given, and arising questions were answered.
- The time to complete the questionnaires lasted – on the average - 15 minutes.
Results

The data were analysed with a repeated measures multivariate analysis of variance (RM - MANOVA) that yielded a significant multivariate effect (Wilks’ Lambda = .607, $F$ (10,36) = 2.33, $p < .03$), which was followed up with univariate tests.
Three out of 10 dependent measures have changed statistically significantly:

1. Pre-competition anxiety has decreased ($p = .04$)
2. Task-orientation has increased ($p = .04$)
3. Using emotions to facilitate performance has decreased ($p = .06$)
Although statistically significant, the disclosed changes were very small, for example:

<table>
<thead>
<tr>
<th>Percent changes</th>
<th>Effect sizes (Cohen's $d$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pre-competition anxiety; 5.5%</td>
<td>0.26</td>
</tr>
<tr>
<td>2. Task-orientation; 3.7%</td>
<td>0.33</td>
</tr>
<tr>
<td>3. Using emotions to facilitate performance; 5.0%</td>
<td>0.25</td>
</tr>
</tbody>
</table>
Conclusion

• Fewer and smaller changes have occurred than expected.
• The observed changes were related to sport participation (experience).
• While in this age group (from U13 to U14) minimal changes have occurred, in older age groups these changes may be more prominent.
• Yearly psychological screening in sport talent care programs is warranted.
Thank you for your attention!
Higher extroversion scores are linked to better psychological skills in elites junior soccer teams

Speaker: Attila Velenczei
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Introduction

Extroversion is a trait through which an individual could optimize the level of arousal, which in turn is connected to athletic performance.

It has been documented that sports participants show greater extroversion than non-participants.

It is also known that team-sport participants exhibit, in general, greater extroversion than participants in individual sports or non-participants.
At this time it is unknown whether extroversion is associated with other psychological skills essential in team sports, especially in elite athletes.
The objective of the current work was to examine whether higher extroversion scores are linked to a better psychological profile in young elite athletes.

Due to the exploratory nature of the study, no specific hypothesis was formulated.
1. In this study 144 young male soccer players in U13 and U14 age-groups (mean age = 13.5, SD = 0.5) were tested once.

2. They took part in a yearly national training camp where the national teams of the corresponding age-group are being selected.
Measures

Using the short (12-item) Eysenck Personality Inventory (Eysenck & Eysenck, 1964) individual scores for extroversion and neuroticism were obtained. A median split of the former served for the a posteriori grouping.

Subsequently, the two groups were compared on several psychological variables.
Eleven dependent measures were studied

1. Pre-competition anxiety
2. Task-orientation
3. Ego-orientation
4. Amotivation
5. Intrinsic motivation
6. Extrinsic motivation
7. Understanding self emotions
8. Understanding others’ emotions
9. Using emotions to facilitate performance
10. Controlling emotions
11. Neuroticism
Questionnaires

1. Eysenck Personality Inventory (EPI - Eysenck & Eysenck, 1964)
2. Sport Competition Anxiety Test (SCAT – Martens, Vealey, & Burton, 1990)
4. Wong and Law Emotional Intelligence Scale (WLEIS – Wong & Law, 2002),
5. Sport Motivation Scale (SMS – Pelletier et al., 1995)
**Procedure**

- Athletes were tested once in a supervised group setting.
- Talking or interacting was prohibited, both oral and written instructions were given, and arising questions were answered.
- The time to complete the questionnaires lasted between 15 to 20 minutes.
Results

The overall data analysis was performed with a multivariate analysis of variance (MANOVA).

The MANOVA was statistically significant for the high- and low-extraversion groups (Wilks’ Lambda = .795, $F(11,132) = 3.01, p < .001$), therefore, the univariate test results were examined to establish which of the eleven dependent measures have contributed to the multivariate effect.
1. Pre-competition anxiety $F(1,142)=7.1, p = .009$
2. Task-orientation $F(1,142)=3.8, p = .055$
3. Ego-orientation $F(1,142)=0.2, \text{NS}$
4. Amotivation $F(1,142)=5.7, p = .019$
5. Intrinsic motivation $F(1,142)=5.9, p = .017$
6. Extrinsic motivation $F(1,142)=3.1, p = .081$
7. Understanding self emotions $F(1,142)=10.4, p = .002$
8. Understanding others’ emotions $F(1,142)=1.8, \text{NS}$
9. Using emotions $F(1,142)=16.3, p = .001$
10. Controlling emotions $F(1,142)=3.9, p = .051$
11. Neuroticism $F(1,142)=19.0, p = .001$
### Means and standard deviations, %difference (%D), and effect size (d)

<table>
<thead>
<tr>
<th>Variables</th>
<th>High Extroversion</th>
<th>Low Extroversion</th>
<th>%D</th>
<th>Effect size d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-competition anxiety</td>
<td>16,6 – 3,6</td>
<td>18,3 – 4,2</td>
<td>9,3</td>
<td>0,43</td>
</tr>
<tr>
<td>Task-orientation</td>
<td>26,9 – 2,6</td>
<td>25,9 – 3,0</td>
<td>3,7</td>
<td>0,35</td>
</tr>
<tr>
<td>Ego-orientation</td>
<td>18,5 – 4,0</td>
<td>18,3 – 4,0</td>
<td>NS</td>
<td>-</td>
</tr>
<tr>
<td>Amotivation</td>
<td>6,1 – 2,8</td>
<td>7,3 – 3,2</td>
<td>16,4</td>
<td>0,40</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>74,7 – 7,0</td>
<td>71,5 – 9,1</td>
<td>4,3</td>
<td>0,39</td>
</tr>
<tr>
<td>Extrinsic motivation</td>
<td>65,4 – 9,8</td>
<td>62,2 – 12,1</td>
<td>5,0</td>
<td>0,29</td>
</tr>
<tr>
<td>Understanding self emotions</td>
<td>16,2 – 1,8</td>
<td>15,2 – 2,1</td>
<td>6,1</td>
<td>0,51</td>
</tr>
<tr>
<td>Understanding others’ emotions</td>
<td>15,5 – 2,4</td>
<td>15,0 – 2,4</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Using emotions</td>
<td>18,5 – 1,4</td>
<td>17,2 – 2,3</td>
<td>7,0</td>
<td>0,68</td>
</tr>
<tr>
<td>Controlling emotions</td>
<td>14,6 – 2,5</td>
<td>13,7 – 3,1</td>
<td>6,1</td>
<td>0,32</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-2,0 – 2,2</td>
<td>-0,1 – 3,0</td>
<td>93,7</td>
<td>0,71</td>
</tr>
</tbody>
</table>
Conclusions

• Higher extroversion scores are related to a “healthier” psychological profile.

• Further studies are needed to determine the extent to which extroversion could predict other sports-related psychological variables.

• This exploratory study shows that extroversion as a personality trait may be a marker of overall psychological skills in young male soccer players.
Thank you for your attention!
Differences in the psychological skills of five age-groups in a national cohort of elite junior soccer players

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Co-authors and collaborators:
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Introduction

In junior athletes maturation along with experience could make a difference in psychological skills.

Although important in junior sports for both adaptive coaching practices and athletes’ development, age-related differences in adolescent athletes were not examined to date.

A previous longitudinal investigation has shown that changes, although relatively small, do occur even within a one year period.
Introduction

Theories and research findings predict changes / differences in adolescence:

- Erikson's stages of psychosocial development
- Kohlberg's stages of moral development
- Sallis (2000) the sharpest decline in physical activity occurs in adolescence
This cross-sectional study was designed to investigate the differences in sports-related psychological skills between five age-groups (U13 - U17) of male elite soccer players.
Participants

1. In the current study we have tested 331 young male soccer players, aged 13 (n=72), 14 (n=72), 15 (n=62), 16 (n=61) and 17 (n=64) years.

2. They took part in a yearly national training camp where the national teams of the corresponding age-group are being selected.
Measures

The youngsters were compared on six dependent measures

1. Pre-competition anxiety
2. Task-orientation
3. Ego-orientation
4. Amotivation
5. Intrinsic motivation
6. Extrinsic motivation
Questionnaires

1. Sport Competition Anxiety Test (SCAT – Martens, Vealey, & Burton, 1990)


3. Sport Motivation Scale (SMS – Pelletier et al., 1995)
Procedure

• Each age-group was tested separately in a supervised group setting.
• Talking or interacting was prohibited, both oral and written instructions were given, and arising questions were answered.
• The time to complete the three questionnaires lasted less than 15 minutes.
The overall data analysis was performed with a 5 by 6 multivariate analysis of variance (MANOVA), which yielded a statistically significant multivariate effect for age-groups (Wilks’ Lambda = .820, $F_{(24, 1121,045)} = 2.73, p < .001$).

The statistically significant multivariate result was followed up with the examination of the univariate test results automatically calculated in SPSS (V17).
The univariate tests have revealed statistically no significant differences between the five age-groups in ego-orientation and amotivation, but statistically significant differences were found for the other four dependent measures.
Task Orientation

$F(4,326) = 4.29, \ p = .002$
Extrinsic Motivation

$F(4, 326) = 4.07, \ p = .003$
Intrinsic Motivation

$F(4,326)= 4.29, p=.002$
Pre-competition anxiety

\[ F(4,326) = 3.26, \ p = .012 \]
Conclusions

- Task orientation and motivation is lower as adolescent elite male soccer players get older.
- Similar findings are consistently reported in the literature in context of school learning and education.
- Coaching programmes should place weight on increasing motivation and task orientation in young elite athletes approaching a critical age.
Thank you for your attention!
Fear of injury: A primary reason for consideration of career termination among successful junior elite athletes

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Co-authors and collaborators:
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Institute for Health Promotion and Sport Sciences, Eötvös Loránd University and National Institute for Sport, Budapest, Hungary
<table>
<thead>
<tr>
<th>Rank</th>
<th>Nation</th>
<th>Gold</th>
<th>Silver</th>
<th>Bronze</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China (CHN)</td>
<td>30</td>
<td>16</td>
<td>5</td>
<td>51</td>
</tr>
<tr>
<td>2</td>
<td>Russia (RUS)</td>
<td>18</td>
<td>14</td>
<td>11</td>
<td>43</td>
</tr>
<tr>
<td>3</td>
<td>South Korea (KOR)</td>
<td>11</td>
<td>4</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>4</td>
<td>Ukraine (UKR)</td>
<td>9</td>
<td>9</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Mixed-NOCs</td>
<td>9</td>
<td>8</td>
<td>11</td>
<td>28</td>
</tr>
<tr>
<td>5</td>
<td>Cuba (CUB)</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>Australia (AUS)</td>
<td>8</td>
<td>13</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>7</td>
<td>Japan (JPN)</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>8</td>
<td>Hungary (HUN)</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>9</td>
<td>France (FRA)</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>Italy (ITA)</td>
<td>5</td>
<td>9</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Singapore (SIN)</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>
The first Youth Olympic Games (YOG) were held in 2010 in Singapore, where 14-18-year-old athletes competed in 26 sports, also part of the 2012 London Olympic games.

The performance of the Hungarian team was outstanding. With a tally of six gold, four silver and five bronze medals, the team finished eighth on the medal table, in front of countries with famous sporting tradition like Canada, France, Germany, United Kingdom, or USA.

The results of the Hungarian team at the YOG demonstrate the successful functioning of the less than 10-years old national sport talent care programme.
### Results between 2002-2009.

<table>
<thead>
<tr>
<th></th>
<th>European championships</th>
<th></th>
<th>Word championships</th>
<th>Sum.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>2002</td>
<td>21</td>
<td>21</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>2003</td>
<td>21</td>
<td>28</td>
<td>47</td>
<td>11</td>
</tr>
<tr>
<td>2004</td>
<td>27</td>
<td>22</td>
<td>31</td>
<td>13</td>
</tr>
<tr>
<td>2005</td>
<td>23</td>
<td>32</td>
<td>28</td>
<td>11</td>
</tr>
<tr>
<td>2006</td>
<td>34</td>
<td>38</td>
<td>39</td>
<td>22</td>
</tr>
<tr>
<td>2007</td>
<td>40</td>
<td>31</td>
<td>40</td>
<td>19</td>
</tr>
<tr>
<td>2008</td>
<td>40</td>
<td>25</td>
<td>41</td>
<td>18</td>
</tr>
<tr>
<td>2009</td>
<td>37</td>
<td>40</td>
<td>39</td>
<td>26</td>
</tr>
<tr>
<td>Sum.</td>
<td>243</td>
<td>237</td>
<td>281</td>
<td>135</td>
</tr>
</tbody>
</table>

The Heracles Talent Management Program support more than 1300 young athletes every year.

The majority of them have achieved notable success in competition within their age group.
However!

Numerous successful young elite athletes may fail to reach their full potential because of the premature termination of their sporting career.
Based on the different records, we have found that in several sports a large number of athletes give up their sporting career.

<table>
<thead>
<tr>
<th>Sport</th>
<th>Give up</th>
<th>Keep going</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kayak-canoe</td>
<td>67%</td>
<td>33%</td>
</tr>
<tr>
<td>Fencing</td>
<td>61%</td>
<td>39%</td>
</tr>
<tr>
<td>Modern pentathlon</td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>Track and field</td>
<td>57%</td>
<td>43%</td>
</tr>
<tr>
<td>Wrestling</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Swimming</td>
<td>48%</td>
<td>52%</td>
</tr>
</tbody>
</table>
Objectives

The main objective of this study was to explore the most important causes of premature sporting career termination among young talented athletes.

Based on research results (obtained by the last author T. Szabó) in 1976 and another study carried out in 2009 by the whole research team, we have attempted to identify the changes that could have contributed to the reasons for increased early career termination in young elite athletes.
The sample of the studies

1976
- Talented Athletes (N=552)
  - Coaches (N=12)
  - Parents (N=552)

2009
- Talented Athletes (N=1641)
  - Coaches (N=32)
  - Parents (N=551)
- **Questionnaire**  (youth athletes, parents)

- **In-depth interview**  (coaches)

- **Document analysis**  (Annual reports of sports, supported from the central state budget starting from 2002 to 2009)
Results

Until when would you like to take part in competition?

Level 1:
- 2-4 years: 4.3%
- 5-8 years: 8.5%
- More than 8 years: 46.3%
- Don't know: 40.9%

Level 2:
- 2-4 years: 9.4%
- 5-8 years: 17.7%
- More than 8 years: 42.0%
- Don't know: 30.9%
While 30 hours training a week were acceptable three decades ago, today there is serious concern about such high volumes of training.
## Results

### NEGATIVE EXPERIENCES DURING THE SPORTING-CARRIER

<table>
<thead>
<tr>
<th></th>
<th>LEVEL 1. (Champions)</th>
<th>LEVEL 2. (Stars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Injured</td>
<td>442</td>
<td>52,43</td>
</tr>
<tr>
<td>Missing from the school</td>
<td>259</td>
<td>30,72</td>
</tr>
<tr>
<td>I couldn’t make my homework</td>
<td>249</td>
<td>29,54</td>
</tr>
<tr>
<td>I couldn’t go out with my friend</td>
<td>196</td>
<td>23,25</td>
</tr>
<tr>
<td>I got tired</td>
<td>179</td>
<td>21,23</td>
</tr>
<tr>
<td>I fall out with my coach</td>
<td>147</td>
<td>17,44</td>
</tr>
<tr>
<td>I fall with my mother/father</td>
<td>104</td>
<td>12,34</td>
</tr>
<tr>
<td>I have to lose weight</td>
<td>78</td>
<td>9,25</td>
</tr>
</tbody>
</table>
Coaches’ opinions about the negative effects during the young athletes sport-career

"I think, the main problems are the following: injuries, injuries, and injuries again. Those young talented canoers who had to leave for more than 6-8 months, because of an injury could not compete at the same level as before" (kayak-canoe coach)

"First of all I have to emphasize the injuries. Our sport is risky, the equipments is not all that safe all the time" (Ice-hockey coach)

"The question is relevant, the best answer may be connected to injuries. Every gymnast has endured some injuries, and the primary reason why the retired athletes gave up their sporting-career is also related to injuries” (Gymnastics coach)
Conclusions

The findings clearly suggest that the primary reason for career termination among young elite athletes is related to injuries.

In fact 50% of the studied sample (2009) has reported suffering some sort of major injury during their junior athletic career.

These findings suggest that safety and injury-prevention should be considered more carefully in the planning of training regimens of young athletes, especially those elite athletes who are exposed to large number of competitions and high volumes of training.
Thank you for your attention!
The Psychology of Young Elite Athletes
Take-home messages of the symposium

Presented by: Attila Szabo
Institute for Health Promotion and Sport Sciences, Eötvös Loránd University, and National Institute for Sport, Budapest, Hungary
What have we learned from this Symposium?

1. Two studies, a cross sectional and a longitudinal, have shown that there are action-begging psychological changes in the maturing young elite athletes.

2. While it was known that athletes and especially team-sport participants manifest greater extroversion than non-athletes, it appears that extroversion is linked to many other sports-related psychological skills and could be an overall marker of those.

3. Evidence from athletes, coaches and parents shows that fear of injury or re-injury is the primary reason for career termination in young elite athletes.
Thank you for your attention!

Questions?