



## Research Article

# Psychological Factors in the Development of Football-Talent from the Perspective of an Integrative Sport-Talent Model

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### Abstract

This study presents a new, integrative model of sports talent. Following the theoretical part of the study a football-talent research is presented, in which a theoretical framework is provided by this new theory of sports talent. This research examines the role of psychological factors in football talent development. The sample was N=425 football-players of the First Division Men's Junior and Adolescent Football Championships of the Hungarian Football League, and their coaches (N=21). The applied instruments were: Sporting Background Questionnaire, The Tennessee Self-Concept Scale (TSCS – Hungarian version), Psychological Immune Competence Inventory (PICI), Athletic Coping Skills Inventory (ACSI), Advanced Progressive Matrices (APM), Co-Player Questionnaire, and Coach Questionnaire. As a result, significant differences were found between talented and control groups in the case of 27 variables out of 48 (6 scales of the SBQ, 5 scales of the ACSI-28, 9 scales of the PISI, 5 subscales and the Total self-concept scale of the TSCS, and in APM). More talented players showed more favourable values in each of the 27 intra-, and interpersonal dimensions. According to our results, the development of psychological factors (e.g. concentration, lack of anxiety, self-confidence, coping skills, and social skills) within an integrative approach can enhance personal efficiency in developing football giftedness.

### Key words

football, talent, giftedness, sport psychology

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## INTRODUCTION

Football is the most popular sport in the world. Besides its remarkable social and economic impacts it has also significant role in recreation, health promotion and community building, so the approach applied in football-talent care is very important. A possible aim of football-talent development could be nurturing physically and mentally healthy and successful football players, who will be able to represent socially useful values. Talent psychology could give serious contribution to this kind of process. In this study the influence of psychological factors on the development of football-talent is examined. As theoretical framework of this research an integrative talent model is presented, which can contribute to the efficacy of football-talent care.

The applied talent conception or model has a basic influence on the research, as well as on talent identification and developmental work (Balogh & Tóth, 2001; Mező, 2008; Mönks & Mason, 1997, 2000). In the case of general talent theories we can observe a tendency of evolution in the direction of complexity and dynamic approach. Initially, general talent theories and models tried to identify one or more important intrapersonal factors, which lie behind the development of talent (Terman, 1925; Shiefele, 1953; Renzulli, 1986). In the talent model approach those models which already considered the role of the social environment essential in the development of talent represented a significant change (Mönks & Mason, 1997; Czeizel 2004). Later another important, new viewpoint appeared: more modern talent models emphasize the mutual effect the ingredients of talent have on each other, and their dynamics, and treats the development of talent as developmental process (Gagné, 2005; Ziegler, 2005). In this study a new, complex, and dynamic talent-model is introduced (Orosz, 2009). This integrative model provides the theoretical background of the present research concerning psychological factors in the development of football-talent.

### Tendency towards complexity in sports talent models

Theorists usually define sports talent on the basis of sporting achievements and results. In most approaches - explicitly or implicitly- sport talent appears as a prerequisite of success in sports, or as an indicator or predictor of sporting successes in the present/future. Early theories mainly focus on physical factors (Durand-Bush & Salmela, 2001; Regnier, Salmela & Russell, 1993). But, similar to the development of general talent models, sports talent approaches have become increasingly complex, too. For example:

The multidimensional nature of sports talent is emphasized in the Czechoslovak talent selection model of Havlicek, Komadel, Komarik & Simkova (Van Rossum-Gagné, 1994). According to these authors, the following factors influence the development of sports talent: a) stable non-compensated factors (e.g. height); b) stable compensated factors (e.g., speed); c) and non-stable compensated factors (e.g. motivation).

According to Gabler and Ruoff (Révész, 2008), we can consider someone as gifted in certain sports, if he/she has the kind of physical and psychological conditions in different life stages which can promote a higher level of future sporting achievement than would be the case randomly.

Harsányi (1992) considers sports talent to belong to individuals whose inherited (physical, psychological, anthropometric, motor and social) abilities (assuming proper development processes) can most likely ensure a high level of achievement in the future. He identifies several factors lying behind sports talent, and, in his opinion, the interaction of hereditary characteristics and environmental influences determine talent.

In Frenkl's interpretation (Frenkl, 2003), the person as a bio-psycho-social being participates in sporting activities. Achievements are determined by physical and mental attributes, qualities, and social factors.

Baker and Horton (2004) mention primary and secondary factors in defining talent. Primary factors can be categorized into genetic factors, training factors and psychological factors. According to their theory, these modules dominate in the development of sports talent. Secondary factors may have less effect, although their absence may hinder talent development. For example, secondary factors can be the family's sociocultural situation, or other background elements, such as the place of training, the orientation of direction, the tools available and the significance of the professionals involved.

The later sport-talent models emphasize more the psychological and social factors besides the outstanding physical aptitudes. Although the sports talent models above focus on sports, it is likely that different sports need different physical and psychological skills and factors. Because football is at the center of this study, at the next section some theories relating to football talent will be presented.

### Theories of Football Talent

Reilly, Williams and Richardson (2003) did not find any consensus among experts' definitions of football talent. Professional clubs usually select talented players on the basis of the criteria of experienced coaches and observers of players, for example, the Ajax Amsterdam sorting scheme, known as 'TIPS'. In this system technique (T), intelligence (I), personality (P) and speed (S) appear as criteria of talent. These authors present similar, alternative lists of criteria, too. For instance, such lists are the 'TABS' (technique, attitude, balance, speed) or 'SUPS' (speed,

understanding, personality, and skill). Reilly et al., (2003) reported that physical predictive factors, personality characteristics, and cognitive factors were important when they reviewed research into football talent identification. These studies of physical predictors emphasize that players' anthropometric characteristics (e.g., body proportions, body weight, body, and shape or limb circumference) show a significant correlation with performance. In connection with personal characteristics, Reilly et al., (2003) observed personality factors (such as motivation, self-confidence or treating anxiety) that play a significant role in sports achievements. Furthermore, they found that there are differences between inheritance and the determination of personal factors, and some features (e.g. ability to control anxiety) can be significant. They also suggest research into such cognitive factors as anticipation and decision making. In their opinion, two cognitive predictors of football talent are creativity and intelligence. In their study they also describe how the social environment plays a significant role in the unfolding of football talent. Parents, teachers, coaches, friends, and teammates have an impact on the athletes and their values, beliefs, emotions, attitudes and engagement. Finally, they emphasize the role of such cultural and social factors as social trends, popular and traditional cultural values, or socio-economic status.

A kind of implicit theory can be discovered on the basis of research into talent identification. Several researchers have already focused on finding methods of identifying talented football players, for example: According to Savelsbergh et al., (2010), differences in visual search and dislocative behaviour can be used as indicators for identifying talented junior (10-12 year-old) football players. Their subjects (N=20) were all players of the regional selection team of the Royal Dutch Football Association, or other professional clubs. Savelsbergh et al., (2002) published a similar examination of soccer goalkeepers.

The results of Gall et al., (2010) suggest that anthropometric and fitness assessments of elite youth soccer players can play a part in determining their chances of proceeding to higher achievement levels. The 161 players examined were grouped according to whether they achieved international or professional status or remained amateur. Measures were taken across three age categories (under 14, 15 and 16 years of age).

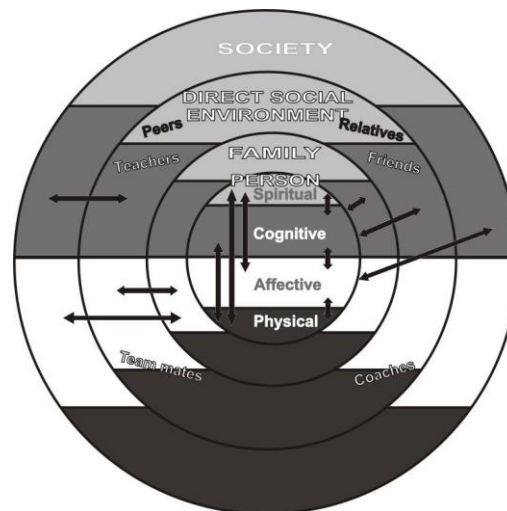
Miranda et al., (2013) studied the influence of a 10-week soccer training program for young players (N=13). They recommend that (in order to identify talent) soccer coaches should collect the following types of data about players: anthropometric data (e.g. body mass, body mass index, lean body mass), psychological data (e.g. total mood disturbance), technical skills and specific performance parameters (e.g. flexibility, slalom dribble and lob pass tests, 30- and 50-m time-trial performances, running intensity at the lactate minimum test and the anaerobic parameters of the Running Anaerobic Sprint Test).

Vaeyens et al., (2007) found that the decision process (in relation to a systematically increased number of players involved in realistic, filmed simulations, which depicted an offensive game situation) can be a good predictor in terms of talent identification. According to their results, more complex situations (e.g.: more players involved in the action) are more effective tools of talent identification. Their subjects were 13.0-15.8 years olds (N=87).

In the theories of football talent presented above, also physical, psychological, social, socio-economical, and cultural factors appear. So based on all this, a complex approach is seen essential in football talent development. Therefore such a holistic model is suggested which considers the multifactorial nature of football-talent and pays attention to the dynamics of talent components.

### **A New, Integrated Model of Sports-Giftedness**

Orosz (2009) recommends a new multifactorial, dynamic model of sports talent to provide a theoretical background to procedures dealing with sports talent development. According to the integrative approach to talent, merit in sport is not a permanent characteristic, but rather a marker formed in the interaction of many dynamic components. The realization of giftedness is not only influenced by the presence or shortage of the key components, but the interaction of all these and the functioning of the whole system. As per the model, the fulfilment of sporting talent is influenced by personal, interpersonal and transpersonal factors. The integrative approach model examines these factors' dynamics (Figure 1).



**Figure 1.** The levels of factors influencing development and the direction of their influence

At the personal level, all the physical, affective and cognitive factors may affect the attainment of goals. Physical factors refer to material aspects. These factors contain our physical body with all of its functional principles (such as anthropometrical and physiological features), and our existential needs (for example: our efforts to maintain financial security) and physical actions. The affective factors are our feelings and emotions about the world (about ourselves, our environment or about events in our life). Such emotions are, for example, the basic emotions of psychology (sadness, fear, anger, disgust, happiness, disdain, shame, remorse, interest, surprise - Izard, 1971), as well as other verbally definable emotional experiences. In addition to these, there are also the often verbally inexpressible shades and depths of the phenomena in the outside world which persons are attracted to or which they reject. Cognitive factors are efforts and processes dealing with thinking, understanding, analysing, and valuing the phenomena of the world. Intelligence, attention, memory, decision-making and anticipation also belong to this category.

At the interpersonal level, the family, the direct social environment (in sport: coaches, peers, friends, relatives and mentors, etc.) or the wider social surroundings may have significant effects on development (Van Rossum, 1995; Nagy 2002; Budavári, 2007, Csikszentmihalyi, Rathunde & Whalen, 1993, Mönks, 1992; Czeizel, 2004, Gagné, 1999; Kaufman & Sternberg, 2008; Harsányi, 1992; Frenkl, 2003; Baker & Horton, 2004; Reilly, Williams & Richardson, 2003; Saether, 2014)

The transpersonal or spiritual level means the connection between phenomena existing beyond our social lives and personal relationships, and their effects on an individual (i.e. chance or destiny). In case of this level, transcendental experience becomes an organic part of an individual's life, and also his or her links with the spiritual side of life (faith, spirituality, spiritual experiences or the connection with the 'self' in a Jungian sense). This includes the person's relationship with his/her ancestors or spiritual predecessors (masters, tutors), as well as the existence of the so called 'fate-factor'.

Physical, affective and cognitive factors mutually affect each other within a person. A good example of the interaction of cognitive and affective factors is the way the cognitive appraisal affects emotional life, or the emotional state affects memory. There are well known examples of the interaction of physical and cognitive factors, when the physical state (e.g. weariness, physical freshness) has an influence on attention, or when a sportsman supports his/her physical development with the aid of mental training. An example of the interaction of physical and affective factors may be the effect of excessive emotional tension on muscle tone, or the effect of respiratory techniques on the alteration of emotional states. In the same way, there is a possible mutual relationship between transpersonal factors and the factors above. According to this, a person's thoughts, feelings, his/her physical condition and circumstances have an effect on their relation to spirituality.

Personality (with its inner complexity) is part of the system of the surrounding environment and is in a diverse interaction with it. Usually, a person's most direct system is the family, and he/she fits into this as the organs fit into the organic system. Wider environmental effects may reach the person through the filter of the family because their basic emotional and mental models evolve among their family members. That is why it may happen that two different players interpret the same coach's communication in different ways. The family is part of the wider environmental system of relatives, friends and other important close individuals, while this wider system is part of the social system itself. These wider systems may also bear on the individual, directly or indirectly.

Every complete system is, in terms of its quality, more than the sum of its parts. To conceptualise this, the simple presence of intra-/interpersonal talent factors is not enough to the fulfilment of talent, but the dynamic interactions within the system is also important. In this way, the lack of a specific component may be compensated by other components, although particular parts of the system may work against each other.

These systems attempt to achieve a balance that is appropriate for them. On an individual basis this appears in physical, affective and cognitive fields. Development involves alteration, but for this there is a need for a temporary disruption of the balance (Watzlawick, Weakland & Fish, 2008). For example, it is possible that a player has to change his thinking radically to remain a member of his or her team, or, that a young player who has just left home is going through an emotional crisis. A typical balance disruption of this type is the physical 'disintegration' of an adolescent or the change in their body-image. That is why it is vital for the development and the evolution of talent that the system should encourage the person to change, and should tolerate a temporary loss of balance. On the other hand, the environmental system aims to maintain this balance, so the extent to which it can react flexibly to personal changes or follow the individual's development flexibly is an important factor. Furthermore, the extent to which it can cut itself adrift from obstructive environmental influences in any given circumstance is also important. It is possible that a sportsperson can overcome their environmental balance but the environmental system will always pull them back to its level of progress. In this sense, consider those diminishing sports talents who cannot resist their best friends and harm themselves both physically and mentally by drinking alcohol or staying up all night. Or just imagine how a sportsperson can perform if they carry with them the experience of the history, failure and the unfortunate fate of their predecessors ('whatever we do, we will never be successful'). They will possibly make the wrong decisions in situations which could lead to success until it emerges that the familial system is subconsciously broadcasting this message. Another example can occur when in sports teams the stable roles and hierarchical relations hinder personal progress, just as when the still dominant, ageing stars hold back the performance of the ambitious youngsters, because their rise may bring them a loss of prestige. In this case structural changes in the team (selling-buying players), replacing the coach or a transfer of a player may dislocate the balance which impedes process. Wider environmental systems are also an integral part of those systems which include them. According to this integrative aspect, the laws of balance prevail at this level. For instance, a football club is part of the given country's football system. The country's social relations, economic status, national mentality – throughout the football federation – directly, indirectly and significantly, influence the standards of the operational level of clubs, for example, the results they achieve at international level. That is why it is a rare phenomenon that a football team emerges from a low level national league and achieves significant results at the international level.

***The integrative approach to talent-nurturing implies some important practical considerations***

It approaches sport talent as a process, instead of as a permanent feature. Due to the interaction of the remaining factors it may be possible that giftedness appears during a later period of the process. For example, certain decisive talent components may congregate later on. At the same time, talent can be lost if the factors which influence the evolution of talent are not present in the right form. To avoid this, it is advisable to use talent-diagnostics embedded into the developmental process instead of a one-off selection. This may be implemented by the fluent diagnostic tracking of sportsperson's status and development, and, by continuously feeding the results measured back into developmental progress.

The more people adopt a systematic development approach the more effective talent-nurturing is. Factors affecting talent evolution appear in everyone in a different way (to a different extent, and at a different quality and balance level). Therefore the integrative approach recommends the operation of talent-nurturing on parallel levels.

The evolution of giftedness at a personal level is assisted if the physical, affective and cognitive components develop equally well. The improvement of social skills also helps to develop giftedness indirectly because by developing social skills, a sportsperson can create social relationships which support them. As part of talent development, it is important to recognise the personal and interpersonal factors which impede the unfolding of talent, and, consequently, provide support in order to overcome them.

Complex sport talent-nurturing programs may assist in implementing a talent-nurturing programme run on parallel levels. In these programmes, besides physical development, there is also a substantial growth in affective, cognitive and social skills. Furthermore, they can incorporate environmental characteristics (such as talent-nurturing training for parents, talent consultancy, sports-psychology guidance for coaches, training sessions, etc.) and, additionally, participation in federal and national talent-nurturing programmes. Finally, the integrative approach considers the cooperation of mutually supporting professionals involved in the system in enhancing talent-nurturing to be of great importance.

## METHOD

The research in this study is part of a longitudinal series of monitoring activities which has a dual purpose. On the one hand, it examines the psychological factors affecting the development of a football talent, according to the following:

- The support for talent-nurturing with psychological tools
- Prevention/reduction of talent-loss with psychological tools
- Talent identification with the aid of psychology

On the other hand, it measures the integrative aspect of the practical validity of sports talent-nurturing on a large sport sample to prevent talent-loss and, to develop talent-nurturing. At the current stage of research we compared the personal and interpersonal significance of players considered gifted and less gifted by their coaches and their team mates. Our preliminary hypothesis was that the more gifted players would perform better on both personal and interpersonal levels.

In the next phase of the tracker monitoring the correlation between future pay-off and current results will be investigated. For instance, how coaches and team mates form their opinions at the present time, and how they predict a player's performance in the future, based on his/her giftedness. In addition, how psychological factors identified in this monitoring relate to the player's later performance and career. Further on, the transpersonal factors contributing to a player's sports-career will be monitored.

### Sample

425 football players and 21 coaches of 22 junior teams of Five Clubs from the First Division of the Hungarian National Championship took part in our study (see: Table 1). In terms of their age-group, the sample was as follows: U15s 5 teams N=96; U16s 5 teams N= 104; U17s 5 teams N=106; U18s 3 teams N=41; U19s 4 teams N=78.

**Table 1.** The sample of our study

Age group	No. of Players	No. of teams
Under 15	96	5
Under 16	104	5
Under 17	106	5
Under 18	41	3
Under 19	78	4

### Procedure

Players and coaches filled in psychological questionnaires and tests in the presence of a psychologist (players under the age of 18 were able to participate in the study with parental permission). The following questionnaires and tests were used:

- Sporting Background Questionnaire
- The Tennessee Self-Concept Scale (TSCS – Hungarian version)
- Psychological Immune Competence Inventory (PICI)
- Athletic Coping Skills Inventory (ACSI)
- Advanced Progressive Matrices (APM)
- Co-Player Questionnaire
- Coach Questionnaire

Below, these tests and questionnaires are presented in detail.

**Sporting Background Questionnaire (SBQ):** This questionnaire was created in order to explore familial factors. It includes the following main topics:

- *Sport as a value in the family.* Issues within this area include exploring how important a role sport plays in the lives of players and their families. For example: 'Did you ever do any sport before you began to play football?' Or: 'Is there any professional sportsperson in your family?' And finally: 'Is there any amateur sportsperson in your family?'
- *The family's social background and circumstances.* These issues helped to explore how much sacrifice from the family is required to support (financially) the sporting career of a player; and these were also applied to map social background of players.
- *To what extent did the player feel his family's emotional, financial and other support during his sports career?*
- *How important a role does football play in the life of the player.* For example: 'Do you care about football besides training (e.g.: Do you read books about football)?'

- *Family beliefs about success.* For example: ‘Which members of the family are considered successful?’ ‘Estimate on a 10-point scale to what extent your parents consider themselves to be successful. What is your opinion?’

**The Tennessee Self-Concept Scale (TSC9):** The Tennessee Self Concept Scale (and its Hungarian version - Dévai & Sipos, 1986) is a kind of self-description questionnaire. It is used to measure the following dimensions of self-concept:

- Physical Self-Concept (questions: 1st-18th): describes how the subject relates to his own body, what his opinions are about his physique, and state of health.
- Moral Self-Concept (questions: 19th-36th): shows the moral values (sincerity, trustworthiness) of the subject.
- Individual Self-Concept (questions: 37th-54th): standards of self-confidence and self-esteem; summary of judgements on will-power, abilities, skills, perseverance and self-confidence.
- Family Self-Concept (questions: 55th-72nd): shows how the individual judges his position within the family, his attitude towards his family and vice versa.
- Social Self-Concept (questions: 73rd-90th): depicts how the individual measures his social status and his attitude towards his peers.
- Total Self-Concept Score (question: 1st-90th) is the sum of the dimensions above; it reflects self-esteem, self-acceptance and self-confidence.

Beyond these dimensions, the validation-indexes were calculated too.

**Psychological Immune Competence Inventory (PICI):** This contains 80 items and it has 16 scales (Oláh, 2005). The PICI examined football-players’ maturity and the efficacy of their psychological immune-system and revealed what kinds of skills they have for coping with stress. The scales are:

- The “positive thinking” scale focuses on personal characteristics in terms of expectations and anticipation of positive changes.
- The “sense of coherence” is the ability to understand and empathize events which have happened to us; our anticipation of environmental changes and a strong belief in the reasonable outcome of future events.
- “Self-respect” goes beyond a positive rating of ourselves; it is a behaviour which plays an active role in maintaining values of self-esteem.
- The “sense of self growth” scale shows an individual’s psychical development, observing the progress of his own development; regarding his capacity for self-completion the individual defines himself as a human being capable of fluent rejuvenation and self-growth.
- “Change and challenge orientation” refer to an instinct for sensitive perception following changes.
- The “self-efficiency” scale describes how the individual can actuate his own/acquired plans and solutions. The individual is very confident that he is able to execute behaviours which contribute to implementing his aims.
- The “social creation capacity” scale has a role in revealing dormant, hidden skills in others and their use in the process of common thinking.
- Scores of “synchronicity” show how a person is able to live with environmental changes, in sync with current events. He is able to fully concentrate all his psychic energies on his aims. The ability to control attention and unconsciousness.
- “Goal orientation” measures how the individual can postpone the fulfilment of his personal needs, and what is more, persevere if any difficulty arises.
- The “sense of control” scale measures how somebody can control his/her life. It represents the conviction that it depends on us as to how we act in situations in which we participate.
- “Social monitoring capacity” records the rate at which an individual can perceive information about the social environment sensitively and selectively, and, use it adequately to achieve further aims.
- “Problem solving capacity” is the individual’s creative capacity to work out plans, alternative solutions or original ideas. An ability to structure learnt knowledge and make it active and useful during the struggles faced in life and in problem solving.
- “Social mobilizing capacity” refers to the skill of persuading, motivating and directing others.
- “Impulse control” is the ability to manage behaviour, rational control and mental programmes. It is the capability of choosing the level of control and the most suitable approach by analysing possible consequences.

- “Emotion control” shows how a person can overcome the distress induced by threats, emergencies and failures, and furthermore, how he can convert them into constructive behaviour.
- The “irritability control” scale measures the reaction to frustration, or the lack of satisfaction of essential needs. The ability to exercise rational control over anger and rage, an ability to use anger in a constructive way.

**Athletic Coping Skills Inventory (ACSI):** The players’ characteristics as manifested in sports-situations were examined with the sport-specific Athletic Coping Skills Inventory (ACSI-28) (Smith et al, 1995). The Hungarian version of the ACSI contains 28 questions (also called ACSI-28) and was created by Jelinek and Oláh (Jelinek, 2000). The system measures the psychological characteristics of sportspeople on the following seven scales:

- The “coping with adversity” scale measures an individual’s behaviour in cases which may occur unexpectedly and raise challenges and, in this way influence sports-performance.
- The “peaking under pressure” scale gauges performance in competitive conditions. When the rate is high the individual achieves a better performance, challenges motivate him.
- The “goal setting/mental preparation” scale measures the individual’s mental preparations and his aims.
- The “concentration” scale describes the level of a person’s focus on training and competition. A motivated sportsman is able to concentrate on his exercises and filter out disturbing factors; additionally, he is equipped to solve unexpected tasks.
- The “freedom from worry” scale shows the extent to which sportspeople worry about their performance and achievement, and about how others judge them.
- The “confidence and achievement motivation” scale shows the level of a person’s self-assurance and positive motivation. A very high level indicates the individual would like to perform at 100 percent during every contest and training session.
- The “coach ability” scale describes and measures the relationship between the coach and the individual. Values show how open the sportsperson is to training instructions and information. He accepts constructive criticism and is able to cooperate with his coach.

**Advanced Progressive Matrices (APM)** APM was applied in order to test intelligence (Raven, Raven & Court, 1998).

**Co-Player Questionnaire.** A Co-Player Questionnaire was created in order to get to know the opinions of sportsmen regarding how talented their teammates are. First, it asked the players to rank their co-players according to their talents. Following this, the players answered the following questions:

- Who are the best team-players, in their opinion?
- Who do they predict a great future for? Why?
- Who are the most popular, in their opinion?
- Who have the greatest amount of self-confidence, in their opinion?
- Who do they think are the most anxious before matches?
- What do they think is necessary to become a good football player?

**Coach Questionnaire.** This questionnaire has been developed in order to collect information about the professionals’ conceptions of giftedness and how they characterize their players. The questions are the same as those in the co-player questionnaire.

- Who are the best team-players, in their opinion?
- Who do they predict a great future for? Why?
- Who are the most popular, in their opinion?
- Who have the greatest amount of self-confidence, in their opinion?
- Who do they think are the most anxious before matches?
- What do they think is necessary to become a good football player?

Coaches had to rank the players according to their talents and they had to describe the five most talented players’ strong-points and weak-points. Coaches also had to define the concept of a talented football player.

## RESULTS

### Grouping on the Basis of Giftedness

At the beginning of data analysis a graduation was made to distinguish players on the basis of their giftedness. On the basis of data a kind of summarized rank order (which shows players’ giftedness) was created by using main component analysis. The main component analysis identified three components. These were:



- Rank order of coaches regarding players' giftedness (abbreviated to: coaches' rank order. Note: lower values are more favourable)
- Co-players' rank order regarding players' giftedness (abbreviated to: co-players' rank order. Note: lower values are more favourable)
- Who do the co-players predict a great future for? (Abbreviated to: great future. Note: higher values are more favourable).

Table 2 shows correlations among these three variables and the main component. Values show really strong and significant correlations with the main component for all components. The reason for the negative correlation of the 'great future' is that this variable's high values are favourable (high values indicate a high number of individuals who predict a 'great future' for someone), but in cases of the rank orders of the co-players or coaches or the summarized rank order, the lower values are favourable.

**Table 2.** Pearson correlation between the main component of summarized rank order and components ( $n=374$ )

Components	Correlation with the main component
Co-players' rank order	.945*
Predicted 'Great future'	-.859*
Coaches' rank order	.907*

\*significance at level  $p < .001$

The main component can give more usable information than the simple rank orders of coaches or co-players. The summarized rank order contains data for 374 players, and not the original 425 in the full sample. This was due to various factors; for example, one coach did not complete the questionnaire, one coach's ranking was of no use from a research perspective, while some players were not included in the coaches' rankings.

In the next step, discriminant analysis (with the stepwise method) was used to study 48 psychological variables in order to find which variables are best separated in different groups. In the first grouping the best 40 percent of players were compared to the remaining 60 percent. Three significant variables were the best predictors from the viewpoint of grouping. These were: confidence and achievement motivation (ACSI), self-efficiency (PISI) and intelligence performance (as a cognitive component). These variables can predict that players are members of the first group (probability is 53.9%), or of the second group (probability is 71.3%). According to the results, psychological variables were hardly able to deal with the question of how to ascribe players to the best class.

Following this, the first 60 percent of players was compared to the remaining 40 percent. According to the results, about 70 percent is the probability that players can be grouped into the first group, but only less than 50 percent is this probability in case of the second group. Finally, the experiences showed that the best solution is to split the sample into two equal groups (Table 3), because in this case, the possibility of precise ranking is more than 60 percent in both groups.

**Table 3.** Talent-ranking groups related to group-rating compared to the full sample at a proportion of 50-50 %.

	Groups	Predictive ranking		Summary
		More talented	Less talented	
Frequency within predicted groups	First half	109 (61.6%)	66 (39.1%)	175 (50.6%)
	Second half	68 (38.4%)	103 (60.9%)	171 (49.4%)
	Total	177 (100.0%)	169 (100.0%)	346 (100.0%)

According to the final result of the grouping, those players who belong to the first half of the talent ranking are considered as talented players, while the others are considered to be members of the less-talented group (Table 4).

**Table 4.** Names, abbreviations and numbers of individuals in groups

Total sample:	$n = 374$ (100%)
Name of group:	Total sample = talented group + other group
Abbreviation of name of group:	Group-TS

Halves of rank order of total samples:	$n = 187$ (50% of 374)				$n = 187$ (50% of 374)
Name of group:	Talented				Others
Abbreviation of name of group:	Group-T				Group-O
Quarters of Group-T:	$n = 47$	$n = 47$	$n = 47$	$n = 46$	
% of half sample:	~25.0%	~25.0%	~25.0%	~25.0%	
% of total sample:	~12.5%	~12.5%	~12.5%	~12.5%	
Name of group:	Most talented	-	-	-	
Abbreviation of name of group:	Group-T1	Group-T2	Group-T3	Group-T4	

### The Difference between Talented and other Players

Independent T-test was applied in order to find the psychological differences between the two groups. In cases of 27 variables, significant differences were observable: players in the first half of the rank order had better values in 27 intra- and interpersonal dimensions (Table 5).

**Table 5.** Differences between talented and other players

Test/ Que.	Variables	Group means		Significance
		Group of talented players (Group-T)	Group of other players (Group-O)	
SBQ	1. Assistance with transport to matches	8.409	7.718	.010
	2. Financial aid	9.304	9.012	.031
	3. Emotional support	9.265	8.812	.006
	4. Mother considers me successful	8.011	7.702	.035
	5. Father believes in my goals	8.672	8.283	.015
	6. Mother believes in my goals	8.739	8.363	.017
ACSI-28	7. Peaking under pressure	13.347	12.374	.000
	8. Goal setting/mental preparation	11.517	11.047	.050
	9. Concentration	13.080	12.439	.001
	10. Freedom from worry	11.778	11.082	.010
	11. Confidence and achievement motivation	13.091	12.298	.000
	12. Positive thinking	15.653	14.717	.000
	13. Sense of coherence	15.420	14.780	.016
	14. Self-respect	15.977	14.896	.000
PISI	15. Sense of self growth	16.264	15.474	.003
	16. Change and challenge orientation	15.710	14.757	.001
	17. Self-efficiency	16.017	14.988	.000
	18. Social creation capacity	13.972	12.971	.000
APM	19. Synchronicity	15.011	14.228	.010
	20. Goal orientation	16.491	15.930	.037
TSCS	21. Advanced Progressive Matrices	27.273	24.757	.001
	22. Physical Self-Concept	73.503	70.500	.001
	23. Moral Self-Concept	72.232	69.902	.012
	24. Personal Self-Concept	74.898	71.000	.000
	25. Family Self-Concept	74.588	72.699	.044
	26. Social Self-Concept	70.373	68.684	.025
	27. Total Self-Concept	365.593	354.464	.001

According to the results, players from the first and the second half differ significantly from a psychological perspective. Those who were considered to be talented had better values than the others in all 27 variables.

### Differences among Talented (Group-T2-4) and Most Talented (Group-T1) Players

Further investigations led us to the conclusion that there would be significant biases among players in the first half of the ranking in terms of psychological features. We were curious about whether the most prominent differ from the others. To test this, we analysed the features of only the first 50 percent of the sample. This talented group was separated into four subgroups with equal members (47-47-47 and 46 persons), with 25 percent of the talented players in each group. In this way the most talented 12.5 per cent (Group 1) of the full sample also could be isolated. A larger-scale subdivision was not reasonable due to the element reduction of samples within separate groups. This was also confirmed by our previous analysis. Figures 2-7 show the results of the comparison of the four subgroups. The graphs show that the first group differs in many factors from the others. In the case of personal self-concept (Figure 2), physical self-concept (Figure 2), concentration (Figure 4) and a feeling of self-efficiency (Figure 5) the results of the most talented players (T1) clearly differed from the seemingly homogeneous sample of other talented groups (T2-4). However, when it comes to the positive thinking dimension (Figure 6) the picture is not so obvious. In the case of the 'freedom from worry' scale (Figure 7) the most talented players overtake the others, the two middle groups' show a solid result while the fourth group becomes detached.

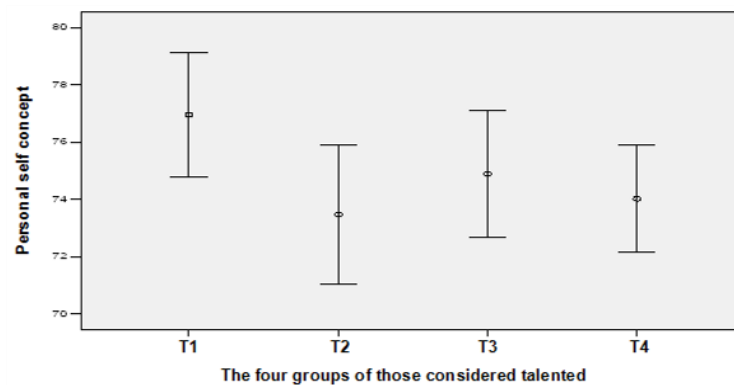


Figure 2. Differences in personal self-concept among the talented groups

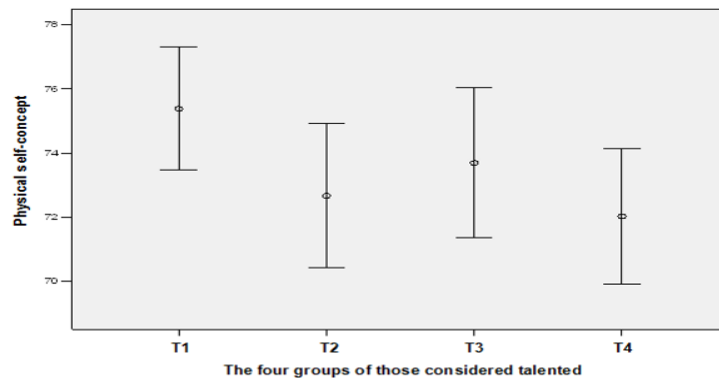


Figure 3. Differences in physical self-concept among the talented groups

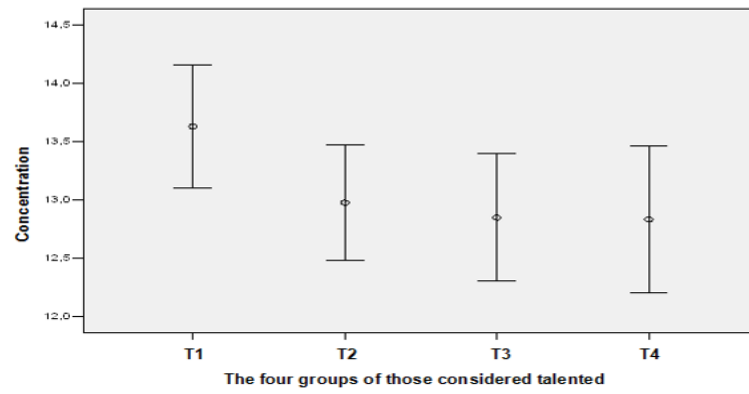


Figure 4. Differences in concentration among the talented groups

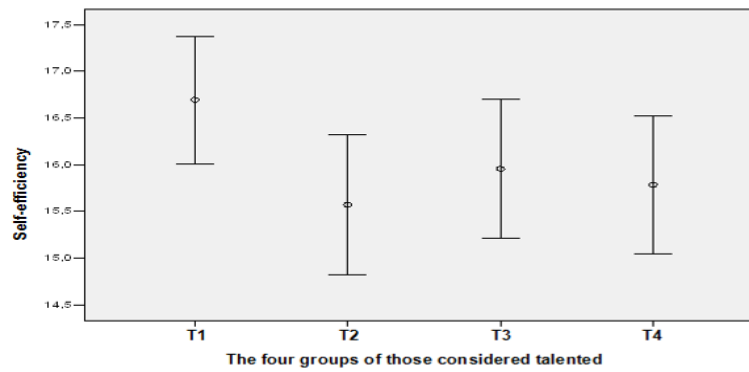


Figure 5. Differences in self-efficiency among the talented groups

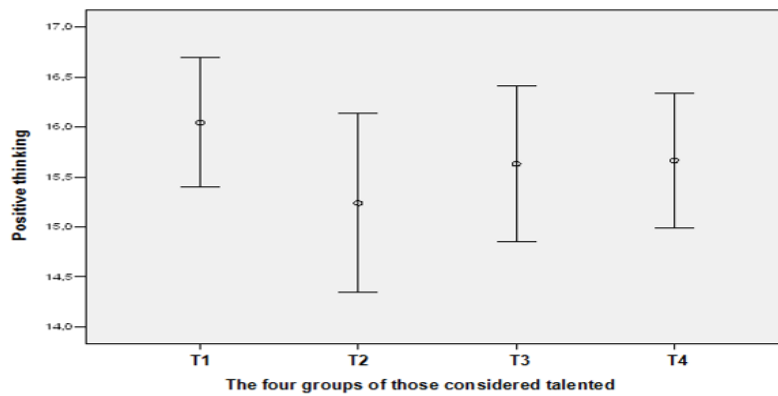


Figure 6. Differences in positive thinking among the talented groups

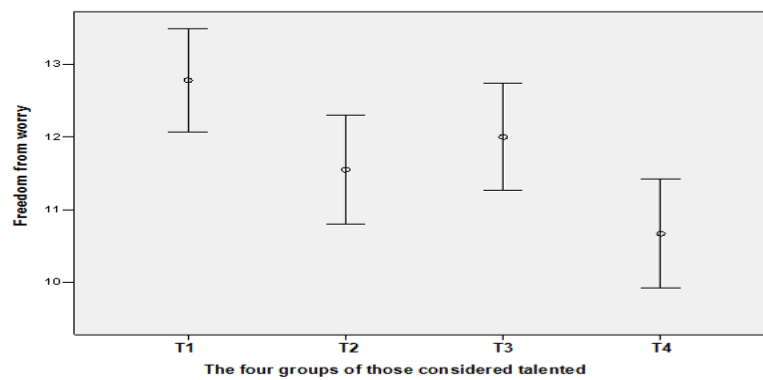


Figure 7. Differences in freedom from worry among the talented groups

It was also checked (with one-way analysis of variance and then conducted contrast analysis) whether the results indicate real statistical discrepancies, and additionally, what variables stand on the background of differences among groups. According to the result of variance analysis (Table 6), players who were considered to be the most talented players (see: group T1) had significantly better values in 11 variables than the others (groups T2-4).

**Table 6.** In what way do the most talented players (T1 group) differ from T2-4 groups?

Name of Variable	Significance
Peaking under pressure	.009
Concentration	.017
Freedom from worry	.001
Change and challenge orientation	.019
Self-efficiency	.024
Social creation capacity	.016
Physical self-concept	.027
Moral self-concept	.046
Personal self-concept	.025
Social self-concept	.018
Total self-concept	.013

To examine any further relationships between personal and interpersonal characteristics we compared the results of self-characterisation, peer-characterisation, coach-characterisation and psychological tests and questionnaires. Comparisons revealed how football players sense and feel themselves in social space, and how they act in testing situations.

#### **Correlation between co-players' opinions regarding giftedness**

The level of correlation between co-players' opinions of giftedness and the perception of other psychological characteristics was investigated. It is supposed that notions of giftedness are related to players' thoughts and perceptions regarding their peers' self-confidence, anxiety and social skills.

To examine the hypothesis, the Spearman rank-correlation calculus was used. The results appear below in Table 7.

**Table 7.** Correlation between co-players' opinions about the best team player, most popular, most self-confident and most anxious peers.

	Team player	Popularity	Self-confident	Anxious
Co-player ranking $r =$	-.744*	-.614*	-.629*	.177*
$n =$	417	411	339	339

\*significance at level  $p < .001$

The close correlation can be seen among the results regarding players' opinions. Talented players are probably considered socially skilled and more self-confident. The perception of anxiety shows a significant correlation with co-player ranking (the positive range correlation lists more anxious players at the end of the hierarchy), but, on the other hand, it is not closely related to their opinion of how talented they found their team mates. The results confirm that the sportsperson's peers also place a high value on social skills, self-confidence and coping with anxiety in the development of football giftedness.

These results also answered the question of whether the most talented players' positive evaluation of their social relations was subjective, or whether their team-mates also agreed with this judgement. According to the results above, the players' self-concept is in harmony with their teammates' opinions.

#### **Differences between Players on the Basis of Popularity**

Another hypothesis was that those players who are considered to be the most popular differ from their contemporaries on the basis of certain psychological characteristics (social self-image, social skills, self-assurance, self-esteem). To investigate this hypothesis, an independent sample t-test was used to compare the psychological characteristics of players who were considered to be the most popular (according to opinions of at least four of their team mates). The minimum four opinions were important, because team mates often decide on the basis of friendship or sympathy and rate others as popular (in effect as an expression of friendship and not because of their real popularity), so some less popular players can get some votes this way. Our prior assumption was

verified according to the results. The most popular players differed from their team mates in the following psychological features:

- Stressful situations motivate them more; they can achieve top performance (peaking under pressure)
- They can cope with unexpected situation and challenges more efficiently (coping with adversity)
- They have better concentration during training and competitions (concentration)
- They have less anxiety regarding their performance (freedom from worry)
- They have more sport-specific self-confidence and motivation (confidence and achievement motivation)
- Positive thinking is typical
- They think they control their lives (sense of control)
- They have more self-respect
- They are more inventive (problem solving capacity)
- They have a higher level of self-efficiency
- They have a higher social monitoring capacity
- They have greater social creation capacity
- They have higher intelligence
- They value their physical features more positively (physical self-image)
- They have positive moral traits (moral self-image)
- They have higher self-esteem and self-assurance (individual self-image)
- They have a more positive approach to social relationships (social self-image)

As per the features above, it is likely that team mates do not simply consider someone popular because of his football giftedness, but as a result of his other characteristics as well.

#### **Differences between Players on the Basis of Self-confidence**

The next question was whether there is any difference among players with different levels of self-confidence in terms of psychological factors. Those players whose self-confidence is higher (on the basis of their co-players' opinions) differ from others in psychological factors (such as personal self-concept, self-efficiency, self-respect, and sport-specific self-confidence), according to our hypothesis.

To control this hypothesis, players were grouped based on their co-players' opinions about players' self-confidence. The criteria for membership of the 'high self-confidence group' was that a minimum of four co-players marked the given player as a 'high self-confidence player' in the Co-players Questionnaire. An independent sample t-test was applied in order to examine this hypothesis.

This hypothesis is confirmed. Players with the highest level of self-confidence (according to opinions of their co-players) have significantly ( $p < 0.05$ ) better results than others from the perspective of the psychological scales below:

- Coping with adversity
- Peaking under pressure
- Concentration
- Freedom from worry
- Confidence and achievement motivation
- Goal setting/mental preparation
- Positive thinking
- Sense of coherence
- Self-respect
- Change and challenge orientation
- Self-efficiency
- Social creation capacity
- Physical self-concept
- Personal self-concept

The results for the self-confidence and performance motivation (including sport-specific self-confidence), self-respect, self-efficiency and individual self-concept (which measures self-confidence and self-esteem) scales support opinions about self-confidence. The correspondence between the results for self-characterisation and peer-characterisation imply that football players described themselves sincerely and accurately during the examination process. The appearance of concentration and freedom from worry support the theory that these features interact in players with the highest level of self-confidence. The above results lead us to the conclusion

that players do not only have confidence because of their football skills. Their level of confidence was basically high and was also boosted by their swiftly developing football skills.

### **Differences between Anxious Players and Non-anxious Players**

The following presumption was that those players who were considered to be the most anxious differ from contemporaries on the basis of certain psychological features (such as freedom from worry, self-confidence, and concentration). The criteria of anxiety based on four co-players' opinions ("most anxious players" were those players who were marked by minimum four other team mates). Data were analysed with an independent sample t-test and this highlighted three variables which significantly differed from the others in the case of the most anxious players: freedom from worry, the father's opinion about the player's success and the mother's opinion about the player's success. Those players who seem to be the most anxious (according to their team mates) do indeed report a higher level of anxiety, and so they feel their families do not consider them successful.

It was also measured how those players suffering from high levels of anxiety according to their coaches differ from their contemporaries as regards certain psychological features. The relevant question in the coach's questionnaires was compared with the players' self-characterisation. The independent sample t-test revealed a significant distinction between the most anxious and the non-anxious players on the following scales, according to the coaches' ranking:

- Peaking under pressure
- Freedom from worry
- Body self-concept
- Moral self-concept
- Individual self-concept

The results confirm the fact that coaches' judgements chime with the players' feeling of anxiety: those who were considered to be the most anxious reported higher levels of anxiety about competitive events. Furthermore, those who are the most anxious have less self-confidence and self-esteem, and they underperform in stressful situations and are less satisfied with their physical characteristics and moral values.

In connection with our previous analysis, the differences between the more anxious and less anxious players were checked on the basis of psychological factors. Comparing the two groups with an independent sample t-test, the results showed that those who consider themselves the most anxious differ significantly in the following features. On the whole they assume that:

- Their fathers do not regard themselves as very successful individuals
- They react poorly in unexpected situations and challenges (coping with adversity, ACSI)
- They are less prone to achieving top performances in stressful situations (peaking under pressure, ACSI)
- They have less ability to concentrate (concentration, ACSI)
- They have no real syncing ability – mental presence (synchronicity, PICI)
- They are more worried about performance (freedom from worry, ACSI)
- They are less likely to develop, or to fulfil themselves (sense of self growth, PICI)
- They lack the ability to control anxiety, frustration and pressure in emergencies (emotion control, PICI)
- They are less satisfied with their physical attributes (physical self-concept, Ten)
- Their levels of self-confidence and self-esteem are lower (individual self-concept).

The results above again confirmed the interaction between anxiety and other significant factors (for example: concentration, self-esteem, self-confidence, family influences). They also support the reliability of certain scales (emotion control, freedom from worry).

## **DISCUSSION**

We supposed that those players who managed to make it to the first division of the football championship had already proved their skills, and those players who are the best according to their coaches and team mates are obviously among the most gifted Hungarian football players. Therefore it was supposed that the applied total giftedness hierarchy of this study truly reflects real football talent. Naturally, this must be emphasised that sporting talent is not a permanent feature, according to our integrative approach. It is a factor derived from the dynamic interaction of many other changing agents, which means that currently there are some players at the lower end of the hierarchy who should progress.

Research data support the integrative approach to giftedness. Total talent-ranking has revealed that more gifted football players have better results in sum on the basis of psychological factors than their less gifted peers. Those who excel among the more talented exceed the others in their psychological characteristics. Consequently, data have objectively demonstrated that the presence of coexisting psychological and family factors are necessary

for the appearance of giftedness. This draws our attention to the fact that nurturing football giftedness is done most effectively if the progress of young players is supported from many directions simultaneously. The more levels we can assist the development, the more energy players can mobilise for self-realisation and so can overcome all obstacles and develop their talent. For this, a kind of “team-approach” is necessary in which many people (coaches, directors, psychologists, doctors, etc.) should cooperate in talent-nurturing. Here it is important to emphasize the importance of the level of expertise among the specialist support staff, and, moreover, the communication between them, and their ability to recognise the limits of their own role.

The results related to the factors which influence a football player confirm the personal psychological factors which are of outstanding importance in developing a sporting talent. The talented players (Group-T) differed from the others (Group-O) in the following significant factors: talented players...

- rate themselves better in both the personal (physical, moral, personal) and interpersonal (family, social) dimensions of self-concept;
- see themselves positively when handling the anxiety caused by performance
- have a more positive assessment of their attentional and concentrational abilities
- have a higher level of sport-specific self-confidence and performance motivation
- have stronger coping skills in the case of nine factors (positive thinking, a sense of coherence, self-respect, a sense of growth, change and challenge orientation, self-efficiency, synchronicity, goal orientation, social creation capacity)
- achieved better results in the APM IQ-test

When the most talented players (T1) were on the focus this was observable that they could achieve even higher levels of performance than the other talented groups (T2-4): the most talented players...

- are more inspired by challenges, and can achieve better performance (peaking under pressure, ACSJ);
- can concentrate better on a task in both competitive and training circumstances; are able to filter out disturbing factors (concentration, ACSJ);
- are not affected by anxiety as much (freedom from worry, ACSJ);
- are more flexible and open-minded and ready to take on challenges (change and challenge orientation, PICJ);
- are more convinced they are able to carry out those behaviours which may help them achieve their aims (self-efficiency, PICJ)
- are followed by others voluntarily in common activities (social creation capacity, PICJ)
- are more satisfied with their physical features (physical self-concept, Tennessee);
- have strong moral characteristics (moral self-concept, Tennessee);
- have a higher level of self-esteem and general self-confidence (personal self-concept, Tennessee);
- possess better relationships with peers (social self-concept, Tennessee).

Our examination revealed that the most effective personal factors which influenced talent evolution were anxiety-handling, self-confidence, self-esteem, concentration and social skills. These significant factors emerged concomitantly during analysis. Therefore the data support the system-approach model, which states that certain factors interact with each other and affect the development of talent. The results draw attention to the need to develop skills beyond purely physical qualities.

Research data also confirmed the significance of interpersonal factors in developing talent in football players. The majority of players who made it to the top level basically enjoy family support. Our results allow us to conclude that the family's financial background may be an advantage for players in reaching the peak of their profession, but it is not crucial. It is far more important how families support the player, given their financial backgrounds. Furthermore, a vital factor in developing talent is the extent of a family's emotional and physical support (i.e.: transport to football matches) plus the level of belief and encouragement. The positive feedback which shows faith and trust enhances self-confidence at the interpersonal level and has a positive effect on development and performance

If there is a lack of familial support, it may be crucial that some individual(s) in the direct environment undertake certain support functions. The easiest way to provide financial support is through the football club providing the player with equipment, transport, and training in camps, etc. Further alternatives can include governmental, federal and other scholarships and supportive programs. Emotional absence can be best compensated for by the direct environment. The coach and the supporting attitude of team mates can help enhance players' self-esteem and self-confidence; the atmosphere created by the team and the relationships within it cannot be neglected. In certain situations it is advisable to have the player examined by a sports



psychologist in order to rebuild his self-confidence. As per our experiences, relationships formed during sports-psychology training sessions are also emotionally supportive.

Team mates' opinions about talent are strongly related to their notion of the most self-confident and social individuals within the team. Those who are more gifted are considered to be more self-confident and to have good social skills. The results relating to self-characterisation and peer-characterisation refer to the fact that team mates' character-perception is in harmony with players' own self-characterisations. Furthermore, we can conclude that the participants filled the questionnaires in accurately. Another fact confirms our observation that the Tennessee self-concept scale's self-criticism indicator did not record any differences in any statistical comparisons among the groups examined. The data shows that the peer community has a very important role in developing talent. Football players can have feedback from team mates about their personal skills and talent. This feedback can influence their self-evaluation and motivation. Favourable social skills may help developing talent because team mates accept those players who have these abilities, giving them better feedback and providing them with social support. So, developing these skills may positively affect talent.

Coaches' opinions about talent were in harmony with team mates' opinions, just as the coaches' characterisations were in accordance with self-characterisation. Their feedback, communication, attitude, faith and encouragement have a strong influence on developing talent. However, it is also clear from the results that neither professionals, nor team mates can diagnose a person's internal characteristics. Consequently, incidental false judgements can also influence a person's self-evaluation, motivation and development. In mapping players' personal characteristics psychodiagnostic methods can help. Information gained from these may help coaches to get to know players objectively and enhance the effectiveness of talent-nurturing during consultations.

## CONCLUSION

The research data obviously drew attention to the importance of developing other skills beyond physical attributes. Psychological factors (concentration, freedom from worry, self-confidence, perseverance, social skills) can enhance personal efficiency when developing footballing talent. The more psychical capacity someone can mobilize to develop themselves, the better results they will be able to achieve in the future. The development of psychological factors can be supported by programs with long-term and well-developed concepts and strategies. Introducing such programs at football clubs would facilitate the development of talent. The fruits of success can be harvested later; therefore, it is necessary to emphasize the development's long-term concept. The more a factor affects the deeper layers of personality, the slower the change may occur.

Relying on our research data we worked out an integrative-approach talent-nurturing project connected to the *Magyar Geniusz Program (Hungarian Genius Program)*. The *Hungarian National Talent Program* is a 20-year, expansive talent-conception accepted by the Hungarian Parliament and lasting until 2028. The Hungarian Genius Program was 3-year long national project embedded in the National Talent Program and supported by the European Union, its main object being the establishment of a national talent-nurturing network. It was a network of so called "talent-points" (i.e. talent centers) established within the framework of a program (Csermely & Kiss, 2008). These centers are open establishments which provide information and assistance for young people of the region to promote talent-nurturing. Their main functions include guidance, career-orientation, opportunities and personal information counselling for talented individuals. The main purpose of the network is the effective operation of talent-nurturing with the aid of communication, co-operation and information flow. Among the various talent-points, we can find organisations with a notable talent-nurturing tradition and others which have been newly established to search for and support gifted youngsters. Today, there are about a thousand registered talent-points in Hungary, which are coordinated by the *National Talent-Point*. The *Kék Bolygó Tebetségpont (Blue Planet Talent-point - Debrecen, Hungary)* has set itself a target to support sports-talents locally through an integrative approach. Within the framework programmes of the Hungarian Genius Program the institution has implemented a one-year sports-talent project, supported by the research results above. Elements of this project are oriented to the cognitive, affective and social factors that influenced the unfolding of sports-talent, and, moreover, are aimed at stimulating complex, supportive co-operation from the system.

### **The project includes the following elements:**

*For sportspeople:* sports-psychological consultation; coaching; learning development; Williams stress-handling training; sports-psychological training groups; psychological training for football teams; motivational courses by Olympic sportspeople.

*For coaches, teachers and hostel prefects:* consultations with psychologists; Williams stress-handling training; group consultations and case discussions; courses on sports psychology and pedagogy.

*For parents:* consultations with psychologists; Williams stress-handling training; family consultations.

*Co-operation with other talent development organisations*, including DVSC Football Club, Debreceni Egyetem Sportigazgatóság (University of Debrecen Sports Directorate), Debreceni Sportcentrum (Debrecen Sports Centre), Debreceni Középiskolai Sportkollégium (Debrecen Secondary School Sports Hostel), Kocka Kör (The Cube Circle).

Sportsmen, coaches, teachers and parents participating in the project have reported positive experiences. These observations were used in *Tehetséghidak Program* ("Bridge to Talent" Program) (which followed the Hungarian Genius Program) in defining a sports-talent strategy.

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