"Who made it to the pros?"
A 5-year longitudinal study on the role of achievement motivation in football

CLAUDIA ZUBER, ROLAND SIEGHARTSLEITNER, MARC ZIBUNG, *and* ACHIM CONZELMANN

Institute of Sport Science, University of Bern, Switzerland

The importance of achievement motivation for the development of athletic performance has been widely acknowledged. However, evidence on the relation of motivational characteristics from adolescence to elite performance level is still rare. The aim of the present study was to examine whether motivational patterns of U14 football players were associated with successful football performance at the U19 age group. A sample of 94 elite youth male football players (M_{Age} = 13.31, SD = 0.29), completed a series of achievement motivation questionnaires. Five years later, their respective football performance level was assessed. Players with a highly intrinsically achievement-oriented profile displayed a higher likelihood of reaching professional level (OR = 3.5), which supports the importance of motivational characteristics for the development of athletic performance over a mid-term prognosis period.

KEY WORDS: Motivation, Pattern analysis Person-oriented approach, Predicting success, Soccer.

The essential role of achievement motivation in developing athletic performance has been widely supported in the talent development literature. Various research groups have been able to demonstrate empirical relationships between motivation and athletic performance (e. g. Forsman, Blomqvist, Davids, Liukkonen, & Konttinen, 2016; Höner & Feichtinger, 2016; Zuber & Conzelmann, 2014; Zuber, Zibung, & Conzelmann, 2015).

Despite the plethora of research studies investigating psychological characteristics in talent development research, longitudinal designs have remained scarce (Vaeyens, Lenoir, Williams, & Philippaerts, 2008) and a majority of studies were cross-sectional (Forsman et al., 2016). Additionally,

Correspondence to: Claudia Zuber, Institute of Sport Science, University of Bern, Switzerland (e-mail: claudia.zuber@ispw.unibe.ch)

most longitudinal studies on achievement motivation were conducted in a time frame within adolescence (Höner & Feichtinger, 2016; Zuber et al., 2015; Zuber & Conzelmann, 2014). So far, only few scientific contributions investigated the predictive impact of motivational characteristics at adolescence on later elite level performance outcomes (Forsman et al., 2016; Unierzyski, 2003; van Yperen, 2009) and thus including the rather difficult junior-to-senior transition (Franck, Stambulova, & Weibull, 2016).

To remediate the lack of longitudinal research addressing achievement motivation and performance in youth elite football and in order to do justice to the broad content of the construct achievement motivation, the purpose of the current study was to examine the extent to which patterns of motivational characteristics at early adolescence (U14) are related to football performance at the young adult age (U19).

Based on the recommendations of Conroy, Elliot and Coatsworth (2007), to combine self-determination theory (Deci & Ryan, 1985) and the hierarchical model of achievement motivation (Elliot & Church, 1997) when addressing achievement motivation in sport, the constructs achievement motivation (Atkinson, 1957), achievement goal orientation (Duda, 1992) and self-determination (Ryan and Deci, 2000) are of particular interest. All three have shown to be relevant predictors of current or future performance in sports as standalone constructs. Of which, achievement goal orientations are the most comprehensively investigated construct in elite sports. Several studies found positive associations of different achievement goal orientations (e.g. competitiveness, task orientation and goal orientation) with performance (e.g. Cervelló, Santos Rosa, Calvo, Jiménez, & Iglesias, 2007; Hellandsig, 1998; Höner & Feichtinger, 2016). Ego orientation was partly found to be associated with either higher risk for drop out (Cervelló, Esearti, & Guzman, 2007) or with no differences between higher- and lower-level athletes (Höner & Feichtinger, 2016; Reilly, Williams, Nevill, & Franks, 2000).

Self-determination theory is not very well examined in elite sports to date, however a few studies have uncovered that low self-determination relates to lower performance and the intention to drop out from elite sports (Gillet, Berjot, Vallerand, Amoura, & Rosnet, 2012; Gillet, Vallerand, & Rosnet, 2009; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002).

The achievement motive hope for success was found to be positively associated with the performance level, whereas fear of failure was rather negatively associated (Elbe & Beckmann, 2006; Höner & Feichtinger, 2016; Sagar, Busch, & Jowett, 2010; Zuber & Conzelmann, 2014).

Combining these constructs, it was already demonstrated that motiva-

tional patterns in young talented players in the sampling and specializing years (cf. Côté, 1999) are (in periods of months up to two years) associated with success in youth ice-hockey (Zuber & Conzelmann, 2019b) and in football (Zuber et al., 2015). In the current study we used previously collected baseline data of motivational characteristics at U14 to examine if these patterns are also relevant for the development of athletic performance over a mid-term prognosis period (see Zuber et al., 2015).

Methods

Formal ethical approval was granted from the authors' institutional review board before conducting the study and all participants and their legal representatives provided their informed consent.

PARTICIPANTS AND PROCEDURE

In the U14 age group a sample of 94 talented male football players (M_{Age} = 13.31, SD = 0.29), members of six regional teams of the Swiss Football Association, participated in the current study. Two of them were excluded as residues (see Zuber et al., 2015). Five years later, the performance level of these players was identified, including 33 professional players (35.8%) who evolved in a 1st to 3rd national division team within Switzerland or were nominated for the Swiss U19 junior national team during the current season. The remaining 59 players evolved in or below the 4th national division and were considered non-professionals.

MEASURES

To determine the players' achievement motivation characteristics, the two dimensions of the achievement motive hope for success (HS) and fear of failure (FF) were measured using the German version of the short scale of the Achievement Motives Scale – Sport (AMS-Sport; Wenhold, Elbe, & Beckmann, 2009). The internal consistencies were acceptable for group comparisons (α_{HS} = .76 and α_{FF} = .73).

Participants' achievement goal orientations were assessed using the German version (Elbe, 2004) of the Sport Orientation Questionnaire (SOQ; Gill & Deeter, 1988). The two scales *win* ("I have the most fun when I win") and *goal orientation* ("I try hardest when I have a specific goal") were used. The internal consistencies for this study are satisfactory (α_{WO} = .72; α_{GO} = .81).

Players' self-determination was evaluated using a German translation (Demetriou, 2012) of the Sport Motivation Scale (SMS; Pelletier et al., 1995). The seven subscales were combined to form a self-determination index (Vallerand, 2001), with high positive scores considered as high levels of self-determination. With α = .86 the scale displayed good internal consistencies.

DATA ANALYSIS

The Linking of Clusters after removal of a Residue method (LICUR; see Bergman, Magnusson, & El-Khouri, 2003) was used to analyze the data. LICUR is a pattern-analytical implementation of the person-oriented approach including three consecutive steps. In the current

analyses, only the third step was conducted for the U19 performance level (for detailed information regarding steps one (residual analysis) and two (cluster analysis), see Zuber et al, 2015). To analyze the participants' individual developmental paths (step 3), the transitions between the clusters and the performance levels were assessed and checked for significant deviations from random variations ($p < .05$) using the exact Fisher 4-field distribution test based on a hypergeometric distribution. The transitions are expressed using odd ratios ($OR = 1.0$ as the expected value; $OR < 1.0$ means less and $OR > 1.0$ more transitions than expected by chance).
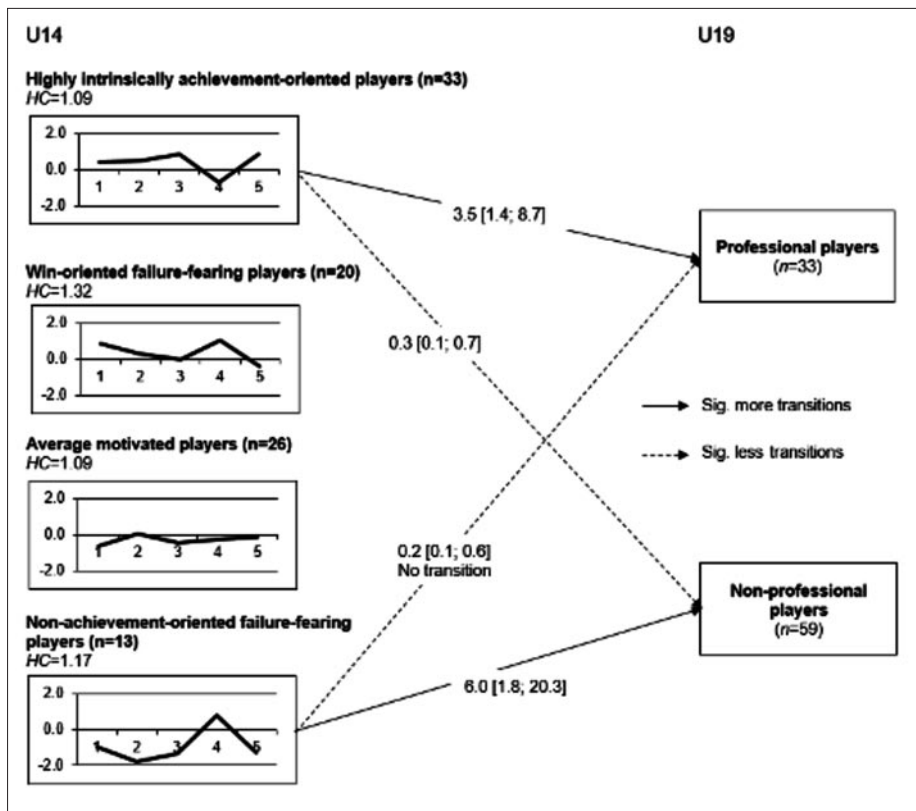

Fig. 1. - Profiles of z-scores of the four clusters and transitions to U19 football success levels (EESS = 53.6%; HC = Homogeneity coefficient (mean square Euclidian distance within the cluster). Operating factors: 1 = Win orientation; 2 = Task orientation; 3 = Hope for success; 4 = Fear of failure; 5 = Self-determination; numbers for significant more ($OR > 1.0$) or less ($OR < 1.0$) transitions are expressed as odds ratios and 95% confidence intervals.

Results

The developmental paths between the clusters based on the motivational constructs win orientation, task orientation, hope for success, fear of failure and self-determination at age U14 and the performance level at age U19 are shown in Figure 1. One significant developmental path (OR = 3.5) emerged from the cluster of the *highly intrinsically achievement-oriented* players to the professional level. Additionally, these participants played significantly less frequently in the lower performance level (*OR* = 0.3). Conversely, players with a *non-achievement-oriented failure-fearing* motivational pattern were six times more likely to become non-professional players than chance would suggest, whereas their chance for becoming professional players was largely decreased (*OR* = 0.2). The *win-oriented failure-fearing* players as well as the *average motivated* players did not show any significant transitions to the two performance levels.

Discussion

The purpose of the present study was to examine the relationship between motivational patterns of U14 elite football players, as assessed in Zuber et al. (2015), and their later performance levels at U19. Consistently with the study of Zuber et al. (2015), the *highly intrinsically achievement-oriented* players displayed a higher than chance probability to achieve professional levels, whereas none of the *non-achievement-oriented failure-fearing* players achieved higher performance levels. Taken together, the assumed importance of motivational characteristics for the development of athletic performance is supported in a longer time period of five years, a duration that was only rarely achieved in the talent literature (Unierzyski, 2003; van Yperen, 2009) and which includes the rather difficult junior-to-senior transition (Franck et al., 2016).

The following limitations of the current study must be considered. First, the criteria used to define performance at U19 relied on professional status achievement. Players who have not turned professionals could potentially still do so, although odds are slim since the way from the fourth league (or lower) to the professional level in Switzerland is quite a long one. Due to the still relatively young age of the players and the high performance level of football in Switzerland, the professional performance level had to be kept relatively broad rather than only including national team players, for example. Also, maintaining professional level over a longer time frame still remains unexplored. Further longitudinal studies could also examine any performance level fluctuations during the player's next career stages.

The current findings over a mid-term time period were conclusive, but motivational characteristics alone do not account for performance outcome. Indeed, when motor characteristics are included in a predictive multidimensional model, as recommended by Williams and Reilly (2000) psychological characteristics may no longer have a significant predictive impact (Sieghartsleitner, Zuber, Zibung, & Conzelmann, 2019). The specific mechanisms explaining how motivation affects performance over a longer time period also remain unexplored empirically. It can be assumed that motivated athletes show specific behaviour that promotes the acquisition and development of motor characteristics (Zuber & Conzelmann, 2019a). The in-depth knowledge of athletes' achievement motivation might be useful both for talent identification and development.

Acknowledgements

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