

REVIEW

# The role of motivation in talent selection and -development in competitive sport

EXERCISE IS MEDICINE



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## Abstract

The early and long-term development of promising young athletes is a decisive factor in being internationally competitive in top-level sports. Among the multitude of talent criteria suggested in the literature, motivation plays a prominent role in the area of psychological characteristics. It is recognised in practice and research as a relevant criterion for performance development across all sports. This article provides an overview of the current state of talent research in the field of motivation. First, the most common theories of motivation in competitive sports are described, then different measurement methods and their advantages and disadvantages as well as the predictive value of motivation for athletic performance are discussed. Finally, implications for practice are suggested. It can be summarised that motivation in sport is conceptualised and operationalised in different ways and that the decision for the right measurement instrument depends on the goal of the assessment. To get a comprehensive picture of an athlete's motivational status, it is useful to assess several aspects of motivation through different methods.

## Zusammenfassung

Die frühe und langfristige Förderung von Nachwuchsathleten stellt einen entscheidenden Faktor dar, wenn es darum geht, im Hochleistungssport international konkurrenzfähig zu sein. Unter den zahlreichen in der Literatur vorgeschlagenen Talentkriterien nimmt die Motivation eine Sonderrolle im Bereich der psychologischen Merkmale ein: Sie wird sportartenübergreifend in Praxis und Forschung als relevantes Kriterium für Leistungsentwicklung anerkannt. Der vorliegende Artikel soll einen Überblick über den aktuellen Stand der Talentforschung im Bereich der Motivation geben. Dabei werden zuerst die gängigsten Motivationstheorien im Leistungssport beschrieben, dann wird auf verschiedene Messverfahren und deren Vor- und Nachteile sowie auf die prognostische Relevanz der Motivation hinsichtlich der sportlichen Leistung eingegangen. Zum Schluss werden Implikationen für die Praxis abgeleitet. Es lässt sich zusammenfassen, dass die Motivation in verschiedener Hinsicht konzeptualisiert und operationalisiert wird. Die Wahl des passenden Messinstruments hängt vom Ziel der Erfassung ab. Um ein möglichst ganzheitliches Bild über die motivationale Verfassung eines Athleten oder einer Athletin zu erhalten, ist es sinnvoll, durch verschiedene Verfahren mehrere Aspekte der Motivation zu beurteilen.

## Introduction

The aim of talent selection in sport is to select the athletes who will perform best in the future, whereas in talent development the aim is to clarify how these athletes must be supported in order to perform best in the future. A particular challenge in this research field is the multifaceted nature of sport. Each sport requires a specific set of physiological, anthropometrical, sociological, and psychological characteristics [1]. Moreover, even within the same sport, different types of athletes can be successful. A successful selection process is one which favours and supports athletes with the potential for later top performances rather than the currently most successful ones. On the conceptual level, the difficulty that now arises is to find the relevant predictors for later success in a particular sport, while on the methodological level it must be asked which predictors can also be reliably measured and, most prominently, have predictive relevance [2]. Regardless of the type of sport, both sports science and sports practice unanimously mention one factor which is crucial for later success: the motivation of an athlete (e.g., [3]). Motivation is often understood as “the hypothetical construct used to describe the internal and/or external forces that lead to the initiation, direction, intensity, and persistence of behavior” [4, p. 428]. Pursuing a specific goal is therefore determined by situational stimuli (e.g., external incentives), personal preferences (e.g., motives, goals) and the interaction of these two factors [5]. However, there are many different definitions and constructs of motivation used in sport. The aim of this article is to provide an overview of the most common theories and measures of motivation and their predictive value in competitive sport based on empirical findings. Finally, some implications for research and practice are drawn.

## Theories and measures of motivation

The best studied motivational constructs in sport are *achievement motivation* [6], *achievement goal orientations* [7,8], and *self-determination* [9] (see Table 1).

According to Atkinson, *achievement motivation* arises from two different needs: on the one hand, the

motive to accomplish goals successfully (*hope for success*), and on the other hand, the motive to avoid failure (*fear of failure*) [10]. Athletes hoping for success perceive performance situations as a challenge, and want to exceed their own standards or their competitors [11]. Athletes fearing failure are not confident of being successful, consider themselves insufficiently prepared, and try to avoid comparative situations [11]. In this line, achievement motives can be assessed using the *Achievement Motives Scale – Sport* (AMS [11]) comprising the two dimensions *hope for success* (e.g., “I enjoy athletic tasks that are slightly difficult for me”) and *fear of failure* (e.g., “I am even afraid of failing at athletic challenges that I believe I can accomplish”) [11]. The AMS was originally developed in German, but a validated English version is also available [12].

**Table 1:** Central motivational constructs in talent selection and development in sport

Construct	Possible measures	Reference
Achievement motivation [6]	<i>Achievement Motives Scale – Sport</i> (AMS)	[11]
	<i>Thematic Apperception Test</i> (TAT)	[13]
	<i>Picture Story Exercise</i> (PSE)	[14]
	<i>Operant Motive Test</i> (OMT)	[15]
Achievement goal orientations [7,8]	<i>Task and Ego Orientation in Sport Questionnaire</i> (TEOSQ)	[21]
	<i>Sport Orientation Questionnaire</i> (SOQ)	[24]
Self-determination [9]	<i>Sport Motivation Scale</i> (SMS)	[26]
Achievement-motivated behaviour [29]	<i>Achievement-Motivated Behaviour in Individual Sports scales</i> (AMBIS-I)	[29]

In addition to this explicit method of measuring achievement motives, there is also the possibility of implicit measurement methods, such as the *Thematic Apperception Test* (TAT [13]), the *Picture Story Exercise* (PSE [14]), or the *Operant Motive Test* (OMT [15]). These measures were developed in the tradition of the so-called implicit motives. Implicit motives are based on early learned, emotionally tinted preferences which largely escape introspection and are only measurable through projective methods. In contrast, explicit motives are cognitively accessible as they are based on self-images, explicit values and explicit goals that a person attributes to him- or herself [16]. In all three projective tests, different images are presented to a participant who should freely associate to them. In the scoring process, the achievement motive (besides other motives) is qualitatively derived from a participant’s answers. While in the TAT and PSE an entirely open response format is used, in the OMT the response format is partly open as questions on the main character in each picture are to be answered [16].

While the achievement motive initiates actions aimed at attaining competence, the *achievement goal orientations* guide these actions towards certain goals [17]. The most common distinction is between task and *ego orientation* [18]: If a person focuses on a *task goal* (e.g., when a swimmer tries to improve his 200 meter time), perceptions of competence are self-referenced [19]. The emphasis here is on meeting the requirements of the task and improving one’s skills. In contrast, if a person emphasizes an *ego goal* (e.g., when a swimmer wants to beat his/her opponents), he/she wants to show that he/she is better than others or exceeds normative standards in sport (e.g., breaking an all-time record) [19]. In this context, the motivational climate in a sports team is often an important factor influencing the achievement goal orientation of an individual athlete. For instance, coaches often try to create a mastery motivational climate (i.e., a climate in which success is defined as self-improvement, mastering tasks and showing effort and persistence) [20]. The *Task and Ego Orientation in Sport Questionnaire* (TEOSQ [21]) is a well-

established instrument to measure *task orientation* (e.g., “I learn something that is fun to do”) and *ego orientation* (e.g., “I can do better than my friends”). The original English version of the TEOSQ was translated into German and validated by Rethorst and Wehrmann [22]. The individual values on these achievement goal dimensions depend on several factors, such as interindividual differences (e.g., perceived competence, self-esteem) and environmental variables (e.g., norm-based evaluations) [23]. Somewhat more sport-specific is the conceptualisation of Gill and Deeter [24] which led to the development of the *Sport Orientation Questionnaire* (SOQ; German version see [25]). It encompasses three dimensions: *competitiveness* (e.g., “I enjoy competing against others”), *goal orientation* (e.g., “Performing to the best of my ability is very important to me”) and *win orientation* (e.g., “The only time I am satisfied is when I win”) [24]. In terms of content, the *goal* and *win orientation* have a strong similarity with the task and *ego orientation* [7], while the *competitiveness* brings in a further aspect relevant to sport.

Another important motivational aspect which contributes to reaching high levels of athletic performance is the degree of *self-determination* – the sense of personal initiative, freedom and choice in behaviour [4]. In *Self-Determination Theory* (SDT [9]), motivation is described as a continuum, ranging from amotivation (i.e., the relative absence of motivation) to extrinsic motivation to intrinsic motivation. While individuals with a high intrinsic motivation go about their activities simply out of interest or pleasure in doing them, individuals with a high extrinsic motivation seek external rewards for their actions [4]. The different types of *self-determination* in the sport context can be assessed with the *Sport Motivation Scale* (SMS [26]) consisting of seven subscales that measure three types of intrinsic motivation (e.g., “For the pleasure that I feel while learning training techniques that I have never tried before”), three types of extrinsic motivation (e.g., “Because it is absolutely necessary to do sports if one wants to be in shape”), and amotivation (e.g., “It is not clear to me anymore; I don’t really think my place is in sport”). The SMS was translated and validated in many languages (for the German version see [27]).

As already mentioned, motivation leads to the initiation, direction, intensity and persistence of behaviour [4]. Therefore, it is also possible to capture the motivation of an individual through behavioural observation. For this purpose, the manifest behaviour of a person is used to draw conclusions about his or her motivation. Of particular relevance in the context of sport is *achievement-motivated behaviour* which is defined by Zuber et al. [28, p. 17] “as self-determined behavior in the context of competitive sport, which aims to achieve *competition- or task-oriented goals* and which involves a high degree of self-regulation and commitment”. Athletes with prevalent achievement-motivated behaviour show a strong proactivity in training and competitions, are very ambitious and highly committed to their athletic performance [28]. By means of the *Achievement-Motivated Behaviour in Individual Sports scales* (AMBIS-I [29]), these specific behaviours can be assessed from the coach’s perspective. Coaches rate how often their athletes have shown specific behaviours in the last twelve months. In conclusion, athletes may be located on three dimensions: *proactivity* (e.g., “He/she independently looked for opportunities to catch up on missed training content”), *ambition* (e.g., “He/she clearly communicated before the competition that he/she wanted to win today”), and *commitment* (e.g., “In highly demanding exercises, he/she worked to the point of exhaustion”) [29]. At the moment only the German version of AMBIS-I is validated [28].

As this brief overview shows, motivation can be measured by different approaches: via self-report questionnaires (e.g., AMS, SOQ, SMS), projective tests (e.g., PSE), or behavioural observation (e.g., AMBIS-I). Self-report questionnaires are easily administered; however, they are prone to induce socially desirable answers. Conversely, implicit procedures are less susceptible to distortions, but collecting, analysing and

interpreting such qualitative data may be tedious [29]. Therefore, such procedures are hardly ever used in talent research [29]. Finally, behavioural observation is less time-consuming than the other approaches, but here motivation is only indirectly captured via behaviour, which also entails other restrictions (e.g., potential confirmation bias by the observer [30]). Consequently, the approach (and instrument) should be chosen depending on the context (talent selection vs. development). More specifically, in talent selection, where there is a high risk of socially desirable responding, motivation is preferably measured by way of behavioural observation [29]. However, this is not a question of “either/or”, as different methods may be combined to obtain a more holistic picture.

## Predictive value of motivation

Notwithstanding the choice of approach and instrument to measure motivation, its predictive value is of utmost importance in talent research (e.g., [2]). Many studies have examined the effects of motivation on future performance or success. For instance, in football it was shown that *hope for success* predicts athletic success [31], whereas *fear of failure* seems to be negatively associated with performance with small, yet still relevant effect sizes [32]. Concerning *achievement goal orientations*, high *task orientation* was found to be beneficial for top performances (e.g., in young football players [33]). In addition, it seems that high levels of *self-determination* are associated with better athletic performance (e.g., in tennis [34]). Conversely, low *self-determination* seems to hinder a successful sporting career. For example, low *self-determination* (i.e., high extrinsic motivation) is associated with an increased risk of dropout from competitive sport [35,36] or the occurrence of burnout symptoms [37]. Furthermore, achievement-motivated behaviour was found to be associated with both current and future performance [28].

The question now arises of how the multidimensional nature of motivation can be taken into account in talent selection and development. For example, it is of interest whether there are interactions between different constructs or whether dysfunctionally low values on one dimension might be compensated for by high values on another one [38]. While variable-oriented approach, which has dominated the research in this field, is not suited to answer these questions, the person-oriented approach is much more promising as it conceives the individual as a functioning whole and focuses on patterns of variables. (For a detailed discussion of the two approaches and their consequences regarding the techniques of data analysis, see Bergman et al. [39].) Implementing a person-oriented approach entails the application of non-linear data analysis techniques [40]. One of the most common techniques is cluster analysis, as it is able to identify typical constellations of characteristics in individuals. The goal of such a person-oriented analysis is to find specific patterns (or also called types) which are relatively stable over time and have a predictive value regarding future athletic performance [40]. Thus, the search is not for specific variables (promising variables such as *hope for success*), but rather for individuals with a certain configuration of characteristic values (promising in the sense of talented athletes described as a pattern of different variables).

Zuber et al. [17] examined the motivation of young football players with a person-oriented approach. In this study, the motivational constructs *achievement goal orientation*, *achievement motivation*, and *self-determination* were combined in order to form motivational patterns and to investigate their relevance for future athletic performance. Four different patterns were identified, two of which were significantly related to future performance: The first (i.e., highly intrinsically achievement-oriented players) was positively related, the second (i.e., non-achievement-oriented failure-fearing players) was negatively related to the success level after one year [17] and five years [41]. It is interesting to note that these

patterns do not seem to be specific to football, as they have been replicated both in ice-hockey [38] and individual sports [42]. Thus, regardless of the type of sport studied, there seems to be career-promoting and career-limiting motivational patterns for athletes [42].

Concerning the achievement-motivated behaviour, there is also a study which has found particularly promising patterns: In a longitudinal study *achievement-motivated behaviour* of young rowers (measured with the AMBIS-I) was combined with their current performance in order to make predictions about their future success 2.5 years later [43]. It was found that athletes who, in addition to a good initial performance, often showed *achievement-motivated behaviour*, participated more often in international competitions than their counterparts exhibiting less *achievement-motivated behaviour* [43].

## Practical implications

Since the nature of athletic talent is clearly multidimensional [33], psychological criteria, most notably motivational factors have to be taken into consideration in talent selection and development. Due to the social-desirability bias that may arise when motivation is measured in a selection context, it is recommended to assess achievement-motivated behaviour from the coach's perspective [28]. Nevertheless, self-report questionnaires may provide valuable information in talent development to target sport psychological interventions in order to improve motivation. For example, studies indicate that pronounced ego-orientation, low levels of *self-determination*, and *fear of failure* are detrimental for future performance [33,34,32]. In case an athlete is found to be highly fearful of failure and to have low levels of *goal orientations* during training and competitions, goal setting training may help to reduce his/her *fear of failure* [44] and to increase his/her *goal orientation* [45]. In the event that an athlete has a profile with moderate levels of *self-determined motivation* [46], autonomy support by explicitly taking the athlete's autonomy needs into consideration, for example by involving him/her in decisions about practice and competition planning, could be a promising intervention [47]. Or, if a group of athletes are strongly *ego-oriented* a sport psychologist may consider a programme fostering a mastery motivational climate. A major aim of such an intervention is to help coaches to change their behaviour to be more mastery-oriented and by doing so to increase athletes' *task goal orientation* [48]. In these three examples, it becomes evident that the starting point for such interventions can be the athlete, his/her coach or even their whole team environment. As neither an individual's motivation, a coach's behaviour nor a team's climate may be changed overnight, such psychological interventions should be oriented toward the long-term.

## Highlights

- Motivational characteristics play an important role in the process of reaching top performance in sport and are therefore important in talent selection and development.
- It is not advisable to use self-report questionnaires in talent selection, because athletes are likely to choose answer options associated with socially desirable connotations.
- In talent development, it is advisable to examine several dimensions of motivation in order to obtain a holistic picture of an athlete's motivational status, which can help to design targeted psychological interventions.

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