European Journal of Sport Science

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tejs20

Selection, de-selection and progression in German football talent promotion

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Published online: 19 Nov 2013.

To cite this article: Arne Güllich , European Journal of Sport Science (2013): Selection, de-selection and progression in German football talent promotion, European Journal of Sport Science, DOI: 10.1080/17461391.2013.858371

To link to this article: http://dx.doi.org/10.1080/17461391.2013.858371

ORIGINAL ARTICLE

Selection, de-selection and progression in German football talent promotion

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Abstract

This study explored to which extent the development of German professional football players is based on early talent identification (TID) and long-term nurture in talent promotion (TP) programmes or on their emergence in the course of repeated procedures of player selection and de-selection in these programmes through childhood and youth. The annual turnover of squad members in national junior teams (2001–2013) and youth elite academies was calculated; national U-team members were followed up with regard to nominations through subsequent seasons and to their success level eventually achieved at senior age; and all current Bundesliga players were analysed retrospectively regarding their earlier involvement in TID/TP programmes. Analyses revealed that the mean annual turnover of squad members was 24.5% (youth academies) and 41.0% (national U-teams), respectively. At any age, the probability of persisting in the programme three years later was <50%. Among current Bundesliga players, the age of recruitment into the TID/TP programme was widely evenly distributed across childhood and youth, respectively. Accordingly, the number of (future) Bundesliga players

coaches who scout ~600,000 young footballers annually and select ~14,000 players aged 11–14 years who are considered talented but have not been selected into a youth academy. These are involved in one weekly session provided in addition to their club practices at 366 bases nationwide (Schott, 2010).

The primary objective is to reinforce professional clubs' future senior teams (club's academies) and the senior Germany team (DFB) through the promotion of player development at young ages. From a theoretical perspective, this concept can be assigned to an individualistic approach as opposed to a collectivistic approach (Güllich & Emrich, 2012):

1. The *individualistic* approach: The interventions applied to the selected players at the individual athlete level in a continuous nurturing process expedite their individual long-term performance progress, which leads to an increased eventual senior performance and increased probability for these players to reinforce a professional team.
2. The *collectivistic* approach: The collective of successful professional senior players emerges through recurrent procedures of selection and de-selection of players in the TP programme across all age periods through childhood and youth. This implies repeated replacements of current players with new players who have previously been educated outside this TP programme and who are deemed greater potential by this time.

It is important to note that in the individualistic approach it is expected that the successful senior players will come exactly from the ranks of the footballers involved in TP since an early age. In the collectivistic approach, it is, instead, essentially irrelevant exactly who will become the players in the senior teams. This is significant in so far as the interventions of the TP programme can only be applied to future high performers who are already involved in the programme during early stages of their career, but not to future high performers who remain unspotted at a young age.

The clubs' and association's programmes start within childhood (youth academies) or youth (national U-teams) which indicates that they purpose to select talents already at a young age in order to enable a long period of nurture until the expected senior high-performance age (Güllich & Emrich, 2012). DFB (2009, p. 2, 11) states that the 'systematic screening and promotion of the talents starts not just during older age categories, but with a variable and playful training process already of our youngest players' and 'promotion of each individual child and youth player must be priority through all stages of the training process' (translation by the author). The concept is clearly driven by an individualistic approach. On the other hand, the squads are nominated annually within each age category in both programmes, which goes along with de-selection of some members and their replacement with new 'side-enterers'.

Problem-related research has indicated that the collectivistic approach may play a significant role. First, studies consistently demonstrate that early TID in football is fraught with considerable uncertainty due to the confluence of a number of characteristics (e.g. Unnithan, White, Georgiou, Iga, & Drust, 2012; Williams & Reilly, 2000). Footballers with different compositions of qualities (physical, physiological attributes, technical and tactical skills) can excel, and performance factors are mutually compensable. In addition, the future development of these qualities is difficult to predict because they are highly amenable to practice and training, and they may also be biased within an age category by inter-individual differences in players' relative age, biological maturation and rate of physical growth (e.g. Helsen, Van Winckel, & Williams, 2005; Malina, 2003). These characteristics are combined with great strength in depth of competition in football due to massive youth participation. Second, an empirical demonstration of positive effects of the interventions applied to the selected players on their long-term performance development is still pending in football. A number of longitudinal studies comparing the development of members in TID/TP programmes and non-members at the individual level in other sports failed, however, to demonstrate according consistent effects (Güllich & Emrich, 2012, for a review). Third, longitudinal observations of TID/TP programmes at the collective level revealed considerable fluctuation of the members with the annual turnover ranging up to 40 or 60% in some studies (Güllich & Emrich, 2012). Thereby, the higher the success level reached, the later the recruitment age. One study conducted in football by Anderson and Miller (2011) showed consistent findings. They examined 1228 players holding full-time academy contracts at 16–18 years in 23 Premier League clubs over 15 seasons. Some 38.8% made a Premier League appearance in their club subsequently, 46.4% of these playing ≤10 matches. Over these 15 seasons, about 90% of all Premier League debutants had not been involved in an academy. Data on earlier TID/TP were, however, not available in that study.

In view of the state of research, the empirical research question arises to which extent the German football TID/TP programme exhibits correspondence

to the individualistic or the collectivistic approach. Respective research in football is lacking to date. This study addresses an empirical exploration with a focus on the 'elite promotion' stage.

The above said leads to the following empirical expectations; assuming that the selected footballers are those with the greatest potential for future success and the programme expedites their performance progress effectively (*individualistic* approach), it is expected that they enlarge their lead in performance over time compared to non-selected players. Under this hypothesis, it is expected that most of the players selected at a young age remain in the

Current professional players' earlier involvement and their recruitment age in youth academies were retrieved from two online sources, namely the players' profiles in the databases on www.transfermarkt.de and www.wikipedia.de. These data were highly consistent (r_{tt} = 0.99). In cases of missing data in one of these sources (n = 48), we considered the player's personal homepage and/or his club's homepage.

Statistical analyses

Analyses were performed using SPSS 21.0. Descriptive data calculated for the samples included frequency distribution, mean value and standard deviation ($M \pm SD$). The annual turnover of squad members was calculated for each respective season according to Güllich and Emrich (2012) as:

$$\frac{\text{ðnumber of entering players þ number of leaving playersÞ/2}}{\text{total number of squad members}}$$

Results

The mean turnover rate across all players in the youth elite academies' U10 to U19 squads was 24.5% annually (transition U10/11: 17.2%; U11/12: 27.4%; U12/13: 18.1%; U13/14: 23.5%; U14/15: 26.1%; U15/16: 32.6%; U16/17: 18.2%; U17/18: 31.7%; U18/19: 33.0% annually).

Among all national U-team players observed from U15 to U19, 44.3% played in a U-team in only one season, 23.4% in two, 15.0% in three, 11.4% for four seasons and only 5.9% played in national U-teams continuously over the five age categories. The mean annual turnover of members was 41.0% in the total population of national U-teams (U15/16: 49.8%; U16/17: 34.8%; U17/18: 46.0%; U18/19: 37.7% annually). The according proportions of members in youth elite academies and national U-teams at each respective age who remained members in the subsequent seasons are shown in Table I. Irrespective of the age category, the probability of *not* being in the programme anymore three years later was >50% and after five years >70%.

Figure 1 displays the proportions of squad members in national U-teams who attained playing in the first or second Bundesliga or below subsequently. Roughly every fourth junior representative player achieved playing in either of the first (26.9%) or the second Bundesliga (22.3%), respectively. This rate strongly depended on the age at which the athletes were first nominated: The younger their debut in a representative U-team, the lower was their probability to reach the first Bundesliga and the more likely were they to play below the second Bundesliga at a senior age. Conversely, the older they made their debut in a national U-team, the more likely were they to play in the first Bundesliga later and the lower was their probability to play below the second Bundesliga.

Table I. Proportions (in %) of the members in Youth Elite Academies and National Junior Teams in defined age categories who remained members in the programmes during the subsequent years

	Transition to age category								
	U11	U12	U13	U14	U15	U16	U17	U18	U19
Youth elite academies									
U10	82.8	60.1	49.2	37.6	27.8	18.7	15.3	10.5	7.0
U11		72.6	59.4	45.5	33.6	22.6	18.5	12.6	8.5
U12			81.8	62.6	46.3	31.2	25.5	17.4	11.7
U13				76.5	56.5	38.1	31.2	21.3	14.3
U14					73.9	49.8	40.7	27.8	18.6
U15						67.4	55.1	37.6	25.2
U16							81.8	55.8	37.4
U17								68.3	45.8
U18									67.0
National junior teams									
U15						68.6	54.2	38.6	35.6
U16							62.9	43.6	37.7
U17								59.1	49.8
U18									59.6

Note: Percentage figures are row-wise and refer to all players having played in the respective age category indicated in the pre-column. The data for the National Junior teams (bottom) include 64 cases who displayed interruptions in their squad career, i.e. who played in a national team before and after one or two years without a nomination [interruptions U16: n = 4; U16 and U17 n = 2 (2% and 1% of all U15 players), U17 n = 19, U17 and U18 n = 11 (4% and 2% of all U16 players), U18 n = 28 (4% of all U17 players)].

Some 88.7% of all current Bundesliga players had been involved in a youth elite academy for at least one season until age category U19 (first Bundesliga 87.9%; second Bundesliga 91.3%), and 30.6% played at least one match in a national U-team (first Bundesliga 35.6%; second Bundesliga 22.7%). Figure 2 presents the distribution of the first and second Bundesliga players' age of first entering a youth academy or a U-team. It also illustrates the accumulation of professional players who have been involved in these programmes with growing age. The recruitment age is widely evenly distributed across all juvenile age categories in both programmes. Only a minority of the current Bundesliga players were already involved in these programmes during the earlier age categories. Accordingly, the number of professional players who were involved in a youth academy and/or national U-team is built up gradually across all age categories through childhood and youth age.

The players of the second Bundesliga were recruited into a youth elite academy at 13.6 ± 3.9 years and those of first Bundesliga at 14.3 ± 3.8 years. Among players of the second Bundesliga who were involved in a national representative team

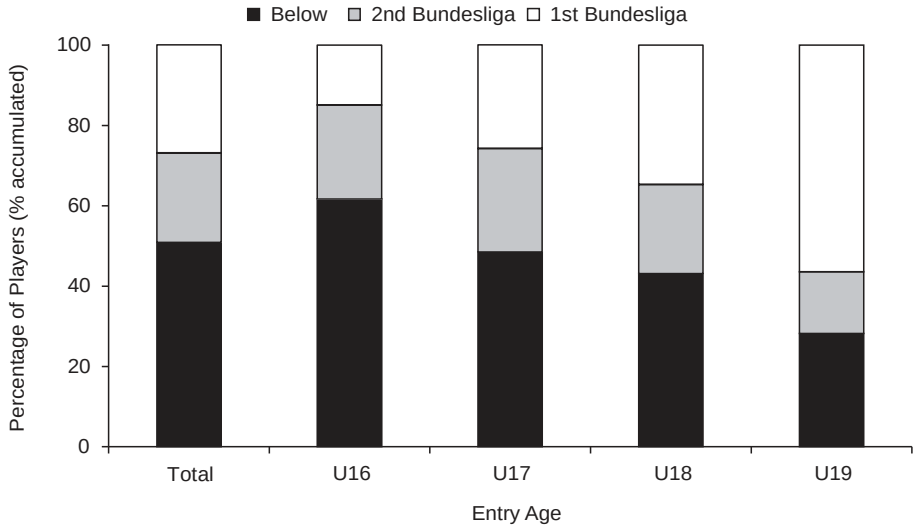

Figure 1. Highest senior league attained until age 24 years among national junior team players making their debut (entry age) at different ages. The category 'below' includes seven players who had retired before age 24 years.

(n = 75), their age of debut in a U-team was 18.0 ± 1.7 years while it was 19.1 ± 2.3 years among the first Bundesliga professionals (n = 273). Among the players of the second Bundesliga with appearance in a national team 76.4% debuted until U19; this proportion was 52.7% among the first Bundesliga footballers, and extracting those who attained playing in the senior Germany team (n = 81), only a minority of 48.2% made their debut until U19.

Discussion

The central finding of this study is that the TID/TP system in German football is characterised by sizeable annual turnover of its members at all stages. This does not imply that the long-term involvement in the TP programme was not possible or did not occur; however, most young players selected at a particularly early age were replaced within short time by others who had developed more prosperously outside the youth academies and national U-teams. Most young members did not reach adolescence within the programme, let alone become professional senior players. At the same time, despite massive expansion of the programme most professional senior players were not involved in TP at a particularly young age. Combining these observations leads to the conclusion that the collective of successful senior players clearly emerges from frequently repeated procedures of selection and de-selection across all age stages (*collectivistic* approach) rather than from early TID and selection and a long-term continuous nurturing process within the TP programme (*individualistic* approach). That is, potential individualistic effects are 'overwritten' by collectivistic effects.

We are not aware of published analyses of this kind in football TID/TP to date. The findings are, however, consistent with those of Anderson and Miller (2011) from Premier League academies and with observations from various other sports (Güllich & Emrich, 2012). They may reflect imperfection either in TID or in TP or both. The difficulty for an individualistic approach lies in the confluence of (1) the 'problem' of massive youth participation in football with (2) uncertain assessment of a player's long-term performance potential and (3) uncertain superiority of effects of interventions applied to the selected players compared to their non-selected peers.

The TID/TP programme involves sizeable numbers of players, but these are still very few compared to the total number of young organised footballers (1). For example, the players nominated for the national U-teams amount to 0.06% of all registered players within the respective age categories. The places in the youth academies correspond to 0.3–0.8% of all German players in the respective age categories, but the 'talent pool' the clubs recruit from is globalised since the 'Bosman Ruling' of 1995 (e.g. Littlewood, Mullen, & Richardson, 2011). This was also followed by the ensuing explosion of professional players' salaries (e.g. Deloitte, 2012) and presumably stimulated more young footballers within Germany and worldwide to invest higher efforts in their aspiration to attain a professional football career. Youth academies have subsequently been built up not only across Europe but worldwide, aiming to condition young footballers to attain playing in clubs of the 'big' European professional leagues (e.g. Darby, Akindes, & Kirwin, 2007; Walters & Rossi, 2009). That is, the competition

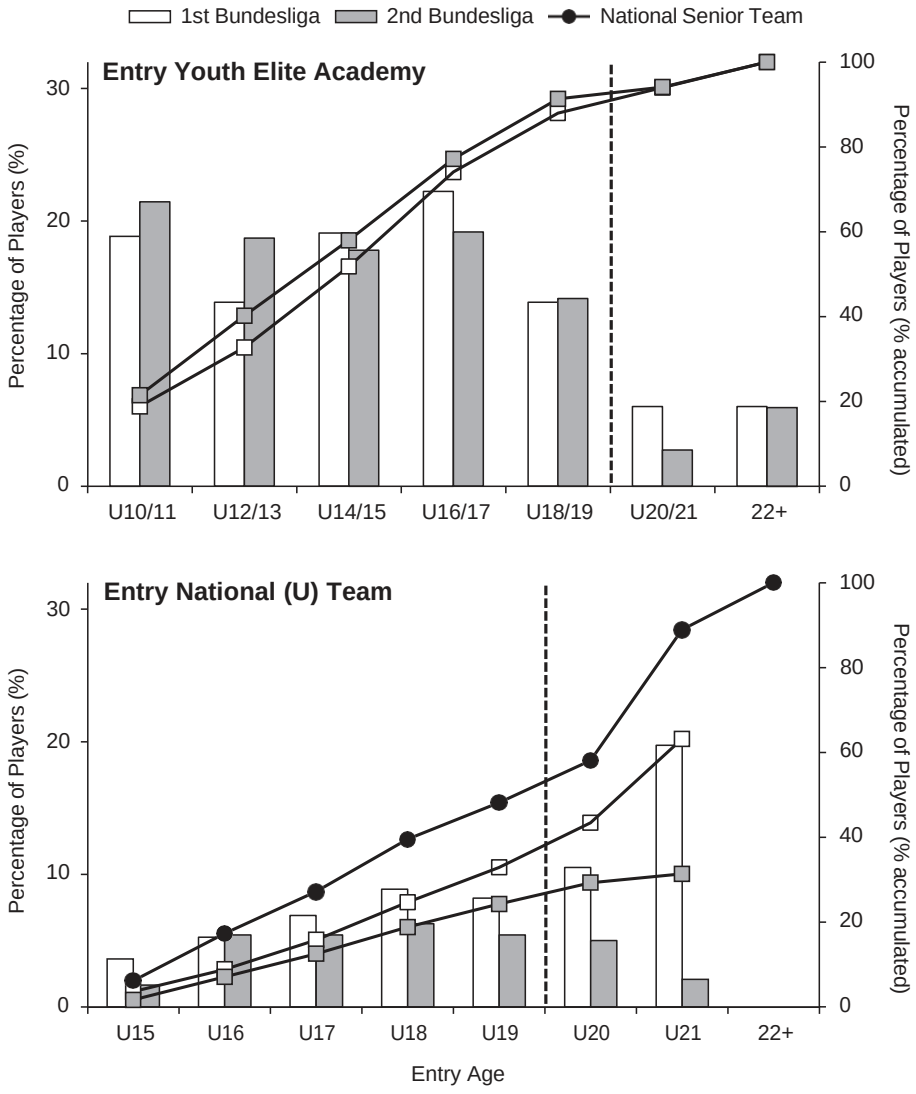

Figure 2. Age of first entry into a Youth Elite Academy (top) and a National representative Junior or Senior Team (bottom) among current players of the first and second Bundesliga. The bars represent the frequency distribution of the age of first entry into the respective programme (left ordinate). The lines represent the accumulated proportion of players having been involved in the programme until the respective age (right ordinate). The black circles in the bottom figure plot the extracted figures from players who have played in the National Senior Team. In the top figure two age categories are pooled, respectively, for clarity. The dashed vertical lines mark the end of the junior age category.

for the places in the youth academies – including Germany – has intensified and is principally global.

Attempting to substantiate the early identification of the most promising players (2), empirical research has identified relevant multidisciplinary selection criteria through group comparisons in follow-up and prospective design (e.g. Gonaus & Müller, 2012; Hirose, 2011; Hulse, 2010; Le Gall, Carling, Williams, & Reilly, 2010; Van Yperen, 2009). Coaches report to actually base TID on multidimensional concepts (Christensen, 2009). In addition, objectivised techniques in terms of multidimensional testing schemes have been proposed (e.g. Reilly, Williams, Nevill, & Franks, 2000; Vaeyens et al., 2006; Williams & Reilly, 2000). In practice, however, the expectation according to the individualistic approach is that the (ascribed) performance potential together with the interventions applied to the selected players ensure that they continue remaining the most promising players through subsequent years not only in lead of selected samples of opponents but among *all* competitors – i.e. ~120,000–160,000 footballers in an age year within Germany plus, in the case of the youth academies, an unknown number of worldwide competitors. In particular within the top margin of the scope (for example, the top 2% include as many as ~2400–3600 players in an age year only within Germany) there are presumably only minimal – if any measurable – differences in early indicators of future long-

term performance potential, and they may not be distinguishable with procedures currently available. That is, the expectation described above is very unlikely from the outset. Consequently, the insufficient discriminative power of available tests and of the integrative 'coach's eye' need not be regarded as their flaw; rather, an accurate early distinction of future high potentials from their peers may simply not be possible in German football.

Regarding the *interventions* applied to the selected players (3), the question is not whether these interventions exert an effect on their performance progress, but whether they are *superior* in promoting performance development compared to non-selected players in many other clubs. Respective comparative longitudinal research is still lacking in football. However, in many other sports such differential effects of various athlete-related interventions could not be corroborated empirically over multiple years (Güllich & Emrich, 2012). It also warrants consideration that football is a sport with low 'asset specificity' (i.e. little specific geographic and/or technical requirements; Flatau & Emrich, 2011). In sports with high 'asset specificity' (e.g. ski-jump, track cycling, platform diving) developmental prospects may be particularly favourable for athletes selected into centralised organisations that provide such requirements widely exclusively. In contrast, football can be played and practised in any club (and beyond, cf. Salmela & Moraes, 2003), and the difference in beneficial conditions for performance development between the selected players in the TP programme and those in many other clubs may be relatively small.

In conclusion, in view of uncertain early identification of future high potentials as well as uncertain effects of interventions applied to selected players, the mass of total players and the plurality of different combinations of types of players, practice regimens, coaches, teams and social environments are obviously superior in yielding cases with particularly prosperous matching of these factors (for example, the current players of the 36 clubs of the first and second Bundesliga were educated in as many as 895 other clubs before).

The German TID/TP system in football has reacted by recruiting great numbers of players at each age and 'trying them out'; those who prove themselves in the programme are retained, the others are released and replaced by new players. That is, it turns out as a selection programme rather than a promotion programme, whereas most talents are identified a posteriori rather than a priori. The programme is systematically expanded in terms of scouted players, places in the programme and in particular by enlarging the number of players tried out per place and time period. For example, the documented annual turnover enables the use of 175 available places in national U-teams for testing ~460 players in the course of three years and ~740 players in six years. It also enables using ~7900 available places in youth elite academies for trying out ~15,000 young players in three years and ~22,300 players in six years. This strategy may be functional in terms of (1) raising the chance of including future high performers and thereby (2) minimising the frequency of successful senior players developing outside this system. This is functional to the TID/TP system in so far as successful players developing outside the programme are antithetical to the internal and external confidence in the programme's effectiveness and thus compromise the basis of its legitimisation.

Yet, overall, the present findings need not necessarily imply that the TID/TP programme is ineffectual. It is conceivable that selecting under-age squads and labelling them as 'youth elite' signalise the types of players demanded and the level of performance other players have to exceed in order to supersede a player within the programme. In this sense, the programme may have a radiating effect on player development outside the programme which may raise the performance level within the 'talent pool' the clubs and DFB can select from. In other words, the (intended) individualistic approach may boost the (unintended but factual) collectivistic approach.

More accurate early TID may not only be hardly realisable, but would presumably also be unnecessary for this latter purpose. In addition, such a radiating effect would not require this immense size of the programme in terms of involved players; reducing it would, however, thwart the legitimising function described above.

Acknowledgements

I wish to express my sincere thanks to the anonymous reviewers for fruitful comments on an earlier version of this paper. I would also like to give my thanks to Kai Forell, Uwe Forell, Pascal Kopnarski and Michael Marxen, master students in physical education and members of the project team, for their support in the collection and preparation of the data.

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