

Roy André Dahl Bogen

**A prospective study of practice histories
and psychosocial factors related to future
success in professional adult football.**

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Forord

I forbindelse med innlevering av denne masteroppgaven ønsker jeg å takke mine medstudenter og veiledere for gode samtaler gjennom hele skriveprosessen.

Geir – Idé.

Tynke - Statistikk.

Christian – For engasjement, oppfølging, og faglig tyngde.

Abstract

The understanding of talent identification and development in football has increasingly emphasized the importance of environmental influences and applied interventions in predicting the potential of youth players. Psychosocial factors have been acknowledged as influential in talent development, while the optimal amount and type of training for children and adolescents to excel in football remains a subject of frequent discussion. This study aimed to prospectively explore the practice histories and psychosocial factors associated with future success in professional adult football in Norway. Utilizing data from a national survey conducted twelve years prior, involving participants from all Norwegian Premier League club academies, the study assessed the participants' career success twelve years after initial testing. Categorizing the participants as elite or non-elite based on the definition of professional football in Norway, the study revealed that players born in the first two quartiles of the year and perceiving their fathers as significant figures in their careers were more prevalent among all participants. Compared to non-elite players, elite players were initially older, had better contracts, participated more frequently in the last national talent camp, and had higher goals for their level of play. While practice histories showed minimal differences, elite players reported greater weekly hours of organized practice. All participants engaged in substantial football-specific practice. Furthermore, elite players demonstrated higher levels of certainty in achieving their goals, doing everything to reach them, scoring higher on self-regulation, exhibiting potentially higher degrees of resilience, and potentially more often benefiting from a supportive and self-regulating environment within their club. The study's findings indicate that players who reach professional adult football in Norway set higher goals, may possess greater self-belief, and possibly employ more effective strategies for development and learning. This study supports the importance of psychosocial factors and emphasizes the long-term developmental nature of talent development in football.

Keywords: talent identification and development, football, prospective, practice engagement, psychosocial

Sammendrag

Forståelsen av talentidentifikasjon og -utvikling i fotball har i økende grad understreket betydningen av miljø, kontekst og anvendte tiltak for å forutsi potensialet til unge spillere. Psykososiale faktorer har blitt anerkjent som innflytelsesrike i talentutvikling, mens den optimale mengden og typen trening barn og ungdom trenger for å utmerke seg i fotball fortsatt er gjenstand for diskusjon. Denne studien hadde som mål å utforske praksishistorikken og psykososiale faktorer knyttet til fremtidig suksess i profesjonell voksenfotball i Norge. Ved å bruke data fra en nasjonal undersøkelse gjennomført tolv år tidligere, som inkluderte spillere fra alle akademiene til Norske Eliteserie-klubber, kartla studien deltakernes karrieresuksess tolv år etter testing. Ved å kategorisere deltakerne som elite eller ikke-elite basert på definisjonen av profesjonell fotball i Norge, viste studien at spillere født i de to første kvartilene av året og som oppfattet fedrene sine som betydningsfulle for karrieren, var utbredt blant alle deltakerne. Sammenlignet med ikke-elite-spillere, var elite-spillere opprinnelig eldre, hadde bedre kontrakter, deltok oftere på den siste nasjonale talentleiren og hadde høyere mål for sitt spiller-nivå. Selv om praksishistorikken viste minimale forskjeller, rapporterte elite-spillere flere ukentlige timer med organisert trening. Alle deltakerne gjennomførte betydelig fotballspesifikk trening. Elite-spillere viste høyere grad av sikkerhet i å oppnå målene sine, gjøre alt for å nå målene sine, scoret høyere på selvregulering og viste muligens høyere grad av motstandsdyktighet. De kan ofte ha dratt nytte av et selvregulerende miljø innenfor klubben. Studiens funn indikerer at spillere som når profesjonell voksenfotball i Norge setter høyere mål, kan ha større tro på seg selv og potensielt bruker mer effektive strategier for utvikling og læring. Denne studien støtter betydningen av psykososiale faktorer og understreker viktigheten av langsiktig talentutvikling i fotball.

Introduction

Research on talent identification and development in football has grown significantly in recent years (Williams et al., 2020, p. 1199), and the demands for reaching and performing at top professional levels keep increasing (Sarmiento et al., 2018, p. 908). Practitioners and other key stakeholders have tended to focus on players' technical, tactical, and physical development and have historically been reluctant to change their practices (e.g., training regimes) (Gledhill et al., 2017, p. 94). Correspondingly, there is a continuous discussion concerning the amount and type of training children and adolescents need to excel in sports (Sarmiento et al., 2018, p. 908).

It is well established that substantial experience is needed to reach top professional levels; however, there are debates concerning what pathway (i.e., early specialization vs. early diversification) is most beneficial for positive youth development and for attaining expertise (Hendry & Hodges, 2018, pp. 81, 82). In the early engagement pathway, both practice and play are seen as essential components, where the emphasis is likewise placed on engagement in play-type activities that are sport-specific but are primarily engaged in for fun (Ford et al., 2009, p. 66).

The large participation base in football makes it very difficult to achieve expertise, and there seems to be a greater need for early football-specific activity in large volumes during development (Haugaasen & Jordet, 2012, p. 178). In the literature, research has mainly used young players aged ≈ 16 in a professional football academy as a benchmark for success and evidence of adult expertise, a method criticized due to the early age of assessment and the fact that many players in professional youth football never reach professional adult football (Hendry & Hodges, 2018, p. 82).

The main findings indicate that professional football players follow an early engagement pathway and engage overall in large amounts of football-specific practice, including football-specific play (Haugaasen & Jordet, 2012, p. 196). The study of Haugaasen et al. (2014, p. 336) found in this respect that within elite youth football players aged 14-21 years in Norway, there were no significant differences in overall practice or for other types of football-specific practice at any age, but that professional players accumulated more hours in play and coach-led practice at the youngest age categories.

When examining elite youth football players aged 12-16 in English football academies, Johnson et al. (2022, p. 6) found no significant differences in total load outside the academy (e.g., sport-specific play) between age groups. The study of Hornig et al. (2016, p. 96) further found that between 52 German football first Bundesliga professionals and 50 fourth to sixth league amateur players, successful players (i.e., defined by being on the National Team) engaged in a variety of activity types, including more non-organized leisure in childhood, more engagement in other sports in adolescence, but engaged more in organized football only at age 22+ years.

These results make it plausible to assume that numerous paths of practice engagement (i.e., differences in activity types and volume) can lead to success (i.e., playing professional adult football). However, this discrepancy can likely be related to the varied definitions and measurements of practice and play activities across studies and occurring problems when retrospectively recalling practice histories from childhood (Hendry & Hodges, 2019, p. 4).

During the last two decades, the understanding of talent identification and development in football has increased in highlighting environmental influences and applied interventions when examining predictors (e.g., psychological, social) prognostic value in youth players (Williams et al., 2020, p. 1204). Thus, it has been acknowledged that psychosocial factors can influence talent development (Gledhill et al., 2017, p. 93), as players wanting to achieve excellent performance must handle diverse everyday life and career challenges, such as transitioning to senior professional football (Larsen et al., 2012, p. 52).

The term psychosocial is, in this context, viewed as how individual psychological characteristics and social influences shape or guide behavior (Gledhill et al., 2017, p. 93). Research on psychosocial factors is underrepresented in longitudinal, prospective studies on talent identification and development in football (Williams et al., 2020, p. 1202), thus conducting such research could provide a better developmental understanding from a lifespan perspective (Gledhill et al., 2017, p. 109). The review of Gledhill et al. (2017, p. 104) suggested, among other variables, that players' psychological characteristics, such as goal-directed attributes (e.g., goal orientation), self-regulation, and resilience are interrelated with social and environmental factors

such as family (parents, siblings, and other significant individuals), and the clubs' developmental perspective.

In achievement contexts (e.g., practice, match), the players' motivation fluctuates their state of involvement by being directed by a task-oriented-, or an ego-oriented goal orientation (Zuber et al., 2015, p. 161). Studies indicate that high performers in male youth football (i.e., 16 years) are more task-oriented, meaning these players exhibit more adaptive motivational tendencies, such as believing that hard work pays off (Höner & Feichtinger, 2016, p. 24; Kavussanu et al., 2011, p. 284). On the contrary, Huijgen et al. (2014, p. 8) study found no relationship between task orientation and success when examining deselected and selected male adolescents aged 16-18 years participating in a talent development program in the Netherlands.

Additionally, it has long been acknowledged that players must exhibit significant commitment and willingness to reach challenging goals (MacNamara et al., 2010a, p. 70). Strong motives such as a determination to succeed and willingness to make sacrifices, listen, and learn are associated with success in football (Holt & Dunn, 2004, p. 199; Mills et al., 2012, p. 1598). To achieve long-term goals, players must use these motivational forces to plan and evaluate their actions (Jordalen et al., 2020, p. 379), behaviors explained by Toering et al. (2009, p. 1509) as self-regulated learning. In football, it is well documented that high scores on the self-regulatory parameters of reflection and effort are associated with a higher level of performance (Reverberi et al., 2021, p. 1; Toering et al., 2012, p. 1). Toering et al. (2009, p. 1509) explain that male youth elite athletes are more able to translate their awareness of strong and weak points into action and are more willing to invest effort into practice.

Self-regulated learning processes provide a foundation for effective learning, but athletes still have to overcome challenges in life and their environment (Río, 2014, p. 13). Long-term, players must maintain their motivation after experiencing failures, an ability commonly referred to as resilience (Sarkar & Fletcher, 2014, p. 1419). Studies indicate that players who become professional use problem-focused coping, described as managing internal and external demands in stressful situations through thought and behaviors (Van Yperen, 2009, p. 324), and exhibit attributes of resilience such as having an optimistic attitude, confidence, and ability to cope with setbacks and pressure (Danielsen et al., 2017, p. 77; Mills et al., 2012, p. 1593).

Even though it is important to encourage young football players to engage and develop key aspects of football performance, it is essential to consider how the context impacts the individuals' differential deployment of psychological behavior (MacNamara et al., 2010b, p. 76). The Norwegian elite sport system operates contrastingly to the nature of several other elite sports systems, and emphasizes a balance of mass participation and elite sport development within the same united organizational framework (Bjørndal et al., 2017, pp. 865, 875). The Norwegian football association reflects this political anchoring and understanding of talent development as they have made the non-professional clubs responsible for the development of players aged 5 to 12 years, local governing bodies responsible for players 13-16 years, and professional clubs responsible for talent development of players' 17-21 years (Nesse et al., 2020, p. 3).

Considering the increased professionalization of football in Norway in recent years (e.g., when the Norwegian Football Association initiated the Quality Club Program in 2014) (Seippel, 2019, p. 666), due to both increased interest, and in turn, aspects of commerce, the professional clubs are however more often concerned about giving the talented players opportunities to develop into elite football regardless of age (Gangsø et al., 2021, p. 1). The Norwegian Football Association has also established a national educational program ("Landslagsskolen") containing comprehensive plans to standardize how the counties and professional clubs work with talent development for players aged 12-16 years (Fotball.no, 2022b).

The professional clubs in Norway have shown different perspectives on skill acquisition, talent selection, and team development (Haukli et al., 2021, p. 5). Gangsø et al. (2021, p. 1) found in this regard that elite youth football players aged 17-19 years from the top-five ranked football academies in Norway (i.e., based on the first football academy classification in Norway in 2017) perceived their development environments to be more positive concerning holistic preparation (e.g., the collaboration between school and academy), alignment of expectations from the coach (e.g., including players in their developmental process, goal setting, planning) and communication compared to the players from the bottom-five ranked football academies.

In line with the increased interest in football in Norway among practitioners and researchers, there were in 2011 conducted a national survey on young talented

Norwegian football players aged 14-21 years (i.e., the Tippeliga 14-21 project) by the Department of Coaching and Psychology at the Norwegian School of Sport Sciences (cf. Haugaasen et al., 2014; Hofseth et al., 2015). The survey sought to portray players' practice histories, everyday training, learning strategies, motivation, and how they manage success and failure. The result from the national survey provides the present study with data collected in the early stages of the players' careers and constructs the basis for prospective examination. In the present study, the players' career success indicated by the ultimate performance outcome is measured twelve years later. Hence, the main aim of this study is to prospectively explore practice histories and psychosocial factors related to future success in professional adult football in Norway.

Methods

Study design

This study used a prospective design. Twelve years after testing, players' career success was measured. The present study has used the definition of professional football in Norway and categorized the players as becoming elite (i.e., playing in the top two divisions) or non-elite based on playing in the top two divisions in Norway, noting that there were also a small number of players at higher levels, such as in a top five league in Europe, who was also included as becoming elite (Toppfotball.no, 2022).

Participants

Twelve years ago, the players participating in the national survey were all a part of an academy within one of 16 Norwegian Premier League clubs, and more than 700 players participated ($N= 706$; $M_{age} = 16.20$, $SD= 1.8$). All Norwegian Premier League clubs and their players participated (except for a few cases where individuals dropped out), meaning the survey captured the entire population, not just a limited sample. All participants were given written information about the project during data collection and submitted written consent before participating. Players under the age of 16 required parental consent. In these consents, players marked if they agreed to participate in future studies and storage of their data for years to come.

Data collection

The data were collected using a self-report questionnaire package within the season's first three months (i.e., spring). The questionnaire was completed in a group setting

within each club separately. Two test leaders administered the process following a standardized protocol to promote reliability. The teams' staff assisted the test leaders in creating a safe and familiar environment for the participants, and the players were assured that identities and answers would remain anonymous.

The players were encouraged to answer the questionnaires as honestly as possible and informed that there were no right or wrong answers, that they had no time constraints, that they were free to pull back from the study at any given moment (in which case the data collected would be deleted), and that assistance was available whenever they needed help or clarification. In the present study, twelve years later, the players' career success was measured using publicly available information from the internet, where the websites fotball.no and transfermarkt.com were used.

The data indicating players' career success was manually registered and noted only available in a restricted cloud. The players had to have played at least one senior-level match for a professional club to be categorized as becoming elite. Players reaching higher levels than what per definition is seen as professional football in Norway were considered as becoming elite, and players reaching any lower levels or with no registered level were considered as becoming non-elite.

Measurements

The included variables originate from what the Tippeliga 14-21 project in 2011 was able to collect and draw on relevance for development and predictors of talent in football (c.f. Gledhill et al., 2017; Williams et al., 2020). In the *first section of the self-reported questionnaire*, the players' answered a series of demographic questions: about aspects such as their age, birthdate, number of older and younger siblings, if their parents were divorced, where their parents come from, what type of contract they had (i.e., amateur, or professional), and if they attended the last national camp for talents. Further, the players' noted the most important person for their career, their goals for level, how certain they are about reaching that goal, how certain they are about doing everything it takes to reach that goal, and how many sessions a week they are willing to train.

The players' goals were divided into 1: having Europe or higher as a goal for level, or 2: having the Norwegian Premier League or lower as a goal for level. The

questions concerning how certain the players are about reaching their goal, how certain they are about doing everything it takes to reach that goal, and how many sessions a week they are willing to train were based on self-efficacy theory (Bandura, 1986), and rated by the players on a scale from 1 low to 10 high. In the present study, these questions are seen as a plausible representative of commitment, dedication, and willingness attributes.

In the next segment of the questionnaire, the players retrospectively noted their weekly hours and months of engagement in football-related activities from the present time traced back to when they first started football: matches, play, organized practice, self-organized practice, and other activities linked to football. This part of the questionnaire was adapted from previous research on practice history (Ford et al., 2009), and the translated questionnaire demonstrated good relative reliability with a large ICC of 0.86 (95% CI=0.77-0.93), where no consistent differences were identified across age categories (Haugaasen et al., 2014, p. 338).

In the *second section of the self-reported questionnaire*, data were collected about the players' perceived expectations from their coach and family, to what extent they were in a self-regulated friendly environment in their club, their goal orientation, self-regulation, and resilience. To measure the players' perceived expectations from their coach and family, they were asked to rank on a scale from 1 low to 10 high how high expectations they perceived these people had about them as a football players. The players' goal orientation was measured using a Norwegian version of the Perception of Success Questionnaire (POSQ). It consisted of 12 items showing acceptable internal consistency among Norwegian participants (.81 for task orientation and .79 for ego orientation) (Roberts & Ommundsen, 1996, p. 52).

The players' self-regulation was measured by using Toering et al. (2013) instrument for football-specific self-regulation of learning. This instrument is reliable and valid for measuring self-regulated learning among youth elite football players and consists of 22 items aimed to measure parameters of reflection, evaluation, and effort, which players rank on a 5-point Likert Scale (1: Completely disagree – 5: Completely agree). For measuring to what degree the players were in a self-regulation-friendly environment in their club, an instrument consisting of 18 items using a 5-point Likert Scale (1: Completely disagree – 5: Completely agree) was used.

The instrument was developed correspondingly to aspects of self-regulated learning in youth football (Toering et al., 2013) and is based on literature about self-regulated learning, motor learning, and autonomy support in sports. Its main goal is to portray how players feel and think about their football practice, team, and head coach. In a pilot study, factor analysis supported a 3-factor model consisting of player-coach relationship, self-regulated encouragement, and self-regulated opportunities, as well as using a total score used in the present study. Lastly, the players' resilience was measured by using the Resilience Scale for Adolescents (READ) consisting of 28 items using a 5-point Likert Scale (1: Completely disagree – 5: Completely agree) (Hjemdal et al., 2006). This version of READ has shown a total Cronbach alpha of .94, in which a lower score corresponds to a higher resilience. (p. 90)

Data analysis

The data collected twelve years ago were initially manually transferred from the written questionnaires into SPSS version 18.0. The data file was checked and corrected for typing errors, minimum and maximum values, and if there were any comments noted by the test leaders or those who transferred the questionnaire into SPSS. Then, twelve years later, the categorization of becoming elite and non-elite was manually added to the original SPSS file for each respective player. The data were then analyzed by using SPSS version 28.0.

Ethics

This study gained ethical approval from the Norwegian Data Protection Authority and was seen as beneficial in the public's interest. Therefore, providing the participants with a written information letter about the present study was an acceptable way of informing the players about further participation in the project. Considering the players' consent to keep their data for future research, their original contact information was used to distribute the written information letter about the present study. In the written information letter, the players were again given the possibility to withdraw from the study, where in that case, the players' data was deleted. Four participants no longer wanted to participate in the present study; thus, their data was deleted.

Results

The demographic data (see Table 1 below) shows that more players becoming elite (39.8%) initially had professional contracts as opposed to non-elite (2.6%), suggesting players' initial performance levels differed at the time the data were collected. It is plausible that the initial performance level represents time and effort already spent on football and additional activities (Van Yperen, 2009, p. 318). Consequently, it is plausible that a higher initial performance level facilitates a better environment for development due to access to better coaches and facilities (Sæther, 2017, p. 14).

Table 1 | Demographic statistics for players becoming elite or non-elite.

	<i>N</i>	Measurement	Pro	Non-Pro
Age *	702	Ratio	17.0 ± 2.0	15.9 ± 1.7
Number of siblings	689	Frequency	2.1 ± 1.1	1.9 ± 1.2
Birth quartile	668	Q1	53 (32,5%)	167 (33,1%)
		Q2	39 (23,9%)	145 (28,7%)
		Q3	45 (27,6%)	114 (22,6%)
		Q4	26 (16,0%)	79 (15,6%)
Parents born in Norway	694	Yes	137 (76,1%)	416 (80,9%)
		No	43 (23,9%)	98 (19,1%)
Divorced parents	695	Yes	43 (23,8%)	114 (22,2%)
		No	138 (76,2%)	400 (77,8%)
The most important person for a career	681	Dad	67 (36,6%)	252 (48,7%)
		Mom	9 (4,8%)	29 (5,6%)
		Parents	39 (21,0%)	68 (13,1%)
		Family and other family members	29 (15,6%)	52 (10,1%)
		Coach	22 (11,8%)	73 (14,0%)
		Others	11 (6,0%)	30 (5,9%)
Type of contract *	684	Non-Pro contract	109 (60,2%)	490 (81,8%)
		Pro contract	72 (39,8%)	13 (2,6%)
Attended last national camp for talents *	481	Yes	43 (23,2%)	12 (2,3%)
		No	113 (61,1%)	313 (60,3%)
Goals for level *	704	Europe	124 (67,0%)	193 (37,2%)
		Norwegian Premier League or Lower	61 (33,0%)	326 (62,8%)

* $p < 0.05$

The players' initial type of contract was therefore seen as a possible confounder in subsequent analyses. As the initial type of contract was measured as a dichotomous categorical variable, a factorial ANOVA was conducted to examine the main effects of becoming elite or non-elite, initial type of contract, and the interaction effects of

becoming elite or non-elite and initial type of contract. Before conducting the factorial ANOVA, assumptions were examined, such as metric level on the dependent variables, normality check with histogram, Q-Q-Plot, and Kolmogorov Smirnov test, no multicollinearity between the two independent variables, and constant variability in measurement error.

When conducting the factorial ANOVA, it was revealed that across the dependent variables, there were no consistent significant ($p < 0.05$) main effects for the initial type of contract, nor an interaction effect between level elite or non-elite and initial type of contract. This result suggested that there is a possibility that other factors confound the results. For example, at the time of testing, the age range of the players (i.e., 12-21 years) was wide, especially in terms of how close one is to being regarded as a senior player.

Supporting this assumption, the demographic data shows that players becoming elite were initially older than their opposites ($p < 0.05$). A binary logistic regression found that players with an elite contract originally had 3.23 (95% CI [2.55, 4.07]) greater odds of being older than their counterparts. After meeting assumptions (e.g., no outliers in the dichotomous variable, equal variance, and normally distributed), a point-biserial correlation similarly showed that there was a moderately positive correlation, $r(682) = .50$, $p < 0.001$, between the initial type of contract and age. Therefore, the subsequent analysis included age as a covariate to maintain statistical power. A one-way ANCOVA was considered an adequate statistical test for comparing means across elite or non-elite levels, where scores were adjusted for initial age.

The presentation of the main results is twofold; firstly, the results from the one-way ANCOVA can be found in Table 2 below and shows means and standard deviations for the predictor variables controlled for initial age. Additionally, binary logistic regression analyses (see Table 3 below) were conducted to further explore the relationship between the players' practice histories, psychosocial factors, and future performance levels. The results from the one-way ANCOVA showed there were little to no significant differences in the players' practice histories. However, it was found that players becoming elite had significantly more weekly hours in organized practice ($p = 0.02$).

The results showed that players' becoming elite more often attended the last national camp for talents as opposed to players' becoming non-elite ($p < 0.05$). Examination of the players' goal-directed attributes revealed that players becoming elite had Europe or higher as a goal for level significantly more often ($p < 0.05$) and that they were more certain about reaching that goal and doing everything it takes to achieve that goal ($p < 0.01$). There was not found a significant difference in amount of practice sessions they were willing to carry out each week; however, a p -value of 0.07 indicates a tendency.

Examination of the players' goal orientation revealed no significant differences in ego- and task orientation. Players becoming elite scored significantly higher on all the self-regulatory parameters (reflection, evaluation, and planning). They scored significantly lower on the resilience scale (READ), which corresponds to a higher degree of resilience, meaning players' becoming elite had higher resilience ($p < 0.01$). Players becoming elite were also found to score significantly higher on being in a self-regulation -friendly environment ($p < 0.05$).

Table 2 | Descriptives for the predictor variables (mean \pm standard deviation)

Predictors		Measurement	<i>N</i>	Non-Pro	Pro	Adjusted mean age=	<i>F</i> (df)	<i>p</i>	η^2
Engagement in practice (total mean yearly)	Weekly matches	Frequency	702	0.85 \pm 0.38	1.00 \pm 0.47	16.19	<i>F</i> (1, 700) = 3.10	0.80	0.00
	Months there were matches.		702	4.29 \pm 1.81	4.90 \pm 1.99	16.19	<i>F</i> (1, 700) = 0.57	0.45	0.00
	Hours of play weekly		702	3.52 \pm 3.04	4.10 \pm 3.70	16.19	<i>F</i> (1, 700) = 0.00	0.94	0.00
	Months there was play.		702	5.31 \pm 3.13	5.88 \pm 3.72	16.19	<i>F</i> (1, 700) = 0.41	0.52	0.00
	Hours of organized practice weekly *		702	3.34 \pm 2.15	4.41 \pm 2.82	16.19	<i>F</i> (1, 700) = 5.57	0.02	0.01
	Months of organized practice		702	4.87 \pm 2.40	5.10 \pm 2.81	16.19	<i>F</i> (1, 700) = 0.36	0.55	0.00
	Hours of self-organized practice weekly		702	2.41 \pm 2.33	2.68 \pm 3.00	16.19	<i>F</i> (1, 700) = 0.00	0.99	0.00

	Months of self-organized practice		702	5.00±3.07	5.17±3.46	16.19	$F(1, 700) = 0.77$	0.38	0.00
	Hours of other activities linked to football weekly		702	2.31±2.20	2.90±2.80	16.19	$F(1, 700) = 0.83$	0.36	0.00
	Months of other activities linked to football.		702	5.43±3.54	5.56±3.96	16.19	$F(1, 700) = 1.61$	0.20	0.00
Goal-directed attributes	Certainty of reaching the goal. *	Scale (1 Low-10 High)	641	5.88±1.16	6.81±1.99	16.23	$F(1, 639) = 18.60$	0.00	0.03
	Certainty of doing everything it takes to reach the goal. *	Scale (1 Low-10 High)	639	8.80±1.52	9.37±1.12	16.25	$F(1, 637) = 28.77$	0.00	0.04
	Practice sessions weekly willingly to perform.	Frequency	607	9.55±3.45	10.60±3.73	16.23	$F(1, 605) = 3.34$	0.07	0.01
	POSQ Ego	Scale (1 Completely Disagree – 5 Completely Agree)	640	3.97±0.99	4.04±1.04	16.26	$F(1, 638) = 0.09$	0.77	0.00
	POSQ Task	Scale (1 Completely Disagree – 5 Completely Agree)	644	4.28±0.93	4.34±0.94	16.24	$F(1, 642) = 0.36$	0.55	0.00
Psychological characteristics	Self-Regulation Reflection *	Scale (1 Completely Disagree – 5 Completely Agree)	654	3.54±0.64	3.72±0.58	16.21	$F(1, 652) = 12.11$	0.00	0.02
	Self-Regulation Evaluation *	Scale (1 Completely Disagree – 5 Completely Agree)	637	3.63±0.69	3.80±0.59	16.22	$F(1, 635) = 10.54$	0.00	0.02
	Self-Regulation Planning *	Scale (1 Completely Disagree – 5 Completely Agree)	626	2.94±0.62	3.12±0.54	16.19	$F(1, 624) = 15.97$	0.00	0.03
	Resilience *	Scale (1 Completely Agree – 5 Completely Disagree)	494	1.80±0.48	1.67±0.49	16.43	$F(1, 492) = 7.60$	0.00	0.02
Environmental characteristics	Self-Regulating Environment *	Scale (1 Completely Agree – 5 Completely Disagree)	688	3.77±0.53	3.84±0.55	16.20	$F(1, 686) = 4.22$	0.04	0.01
	Expectations from coach	Scale (1 Low-10 High)	680	8.10±1.62	8.23±1.54	16.20	$F(1, 678) = 0.99$	0.32	0.00

Expectations from family	Scale (1 Low-10 High)	683	6.93±2.05	6.88±2.14	16.20	F (1, 681)	0.99	0.00
						=		
						0.00		

* p < 0.05

For further examination of the players' practice histories, psychosocial factors, and future performance levels, binary logistic regression was seen as an appropriate test, as it allows using categorical and continuous data as predictor variables. The predictor variables that were theoretically interrelated and aimed to measure similar characteristics were included in the same models. In total, four binary logistic regression analyses controlling for initial age were conducted, where Model 1 included goal for level, and goal-directed attributes as independent variables, Model 2 included psychological characteristics as independent variables, Model 3 included environmental factors as independent variables, Model 4 included the players practice histories as independent variables, where a dichotomous categorization of becoming elite or non-elite as the dependent variable was used. Statistical significance was set at $p < 0.05$.

Before conducting the binary logistic regression analyses, some clarifications for dividing the variables into the models warrant mentioning. Firstly, it was plausible that players' becoming elite experienced higher expectations and were more resilient. Considering that there was no statistically significant difference in the players' perceived expectations from their coach and family ($p > 0.05$), the two variables for expectations were not included in a subsequent model exploring this relationship. However, they were included as environmental factors. Secondly, even though the results indicate a significant number of missing cases in the variable of 'attending last national talent camp', the variable was included in the model of environmental factors, as it may give great insight into the role of being enrolled in such programs in early age.

Following age as a covariate in the one-way ANCOVA, age as a continuous variable was seen as a control variable in the binary logistic regression models. Assumptions were examined, and no multicollinearity was found between the independent variables, as collinearity diagnosis revealed no variance inflation factor (VIF) over 5. In a pilot analysis, however, age as a continuous predictor variable indicated a poor fit between the models and the data, as the calculated Hosmer-Lemeshow test value was significant ($p < 0.05$).

Therefore, age as a continuous variable was recoded into a categorical variable with two categories (1: 12-17 years; 2: 18-21 years). The categorization was based on how the Norwegian Football Association divides youth football (Fotball.no, 2022a) and regarded as adequate because players' becoming elite initially were older than their opposites. After recoding age as a continuous variable into two categories, we could conduct the binary logistic regression analyses without violating the Hosmer-Lemeshow test assumptions. Lastly, the linearity of the logits for the independent variables was checked using the Box-Tidwell transformation test (Box & Tidwell, 1962), revealing that the transformed independent variables were linearly related to the log odds, as all transformed independent variables was non-significant ($p > 0.05$). In the analyses, the elite group was used as a reference group for the predictive probability of scoring either higher or lower on the predictor variables in the respective models.

Table 3 | Predictors' effect on becoming elite or non-elite.

Predictor variables		B	S.E.	p-value	Exp(B)	95% CI for Exp(B)
Engagement in practice (total mean yearly)	Weekly matches	0.35	0.27	1.97	1.43	0.83-2.50
	Months with matches	0.08	0.07	0.25	1.08	0.95-1.23
	Hours of play weekly	-0.04	0.04	0.22	0.96	0.89-1.03
	Months with play	0.06	0.04	0.15	1.06	0.98-1.14
	Hours of organized practice weekly	0.17	0.05	0.00	1.18	1.07-1.31
	Months of organized practice	-0.09	0.05	0.08	0.92	0.83-1.01
	Hours of self-organized practice weekly	-0.02	0.04	0.70	0.98	0.90-1.07
	Months of self-organized practice	-0.05	0.04	0.20	0.95	0.87-1.02
	Hours of other activities linked to football	0.05	0.04	0.22	1.06	0.97-1.15
	Months of other activities linked to football	-0.06	0.03	0.06	0.94	0.88-1.00
Goal and goal-directed attributes	Goals for level 1: Europe 2*: PL in Norway or lower	-0.98	0.22	0.00	2.66	1.72-4.11
	POSQ Ego	0.03	0.14	0.84	1.03	0.79-1.35
	POSQ Task	-0.12	0.15	0.41	0.88	0.66-1.35
	Certainty of reaching the goal	0.11	0.54	0.04	1.12	1.00-1.24
	Certainty of doing everything it takes to reach the goal.	0.21	0.09	0.03	1.23	1.02-1.49
	Practice sessions weekly willingly to perform	0.04	0.03	0.14	1.05	0.99-1.11
Psychological characteristics	Self-Regulation <i>Reflection</i>	0.57	0.32	0.07	1.77	0.95-3.30
	Self-Regulation <i>Evaluation</i>	-0.19	0.28	0.49	0.82	0.48-1.42
	Self-regulation <i>Planning</i>	0.32	0.25	0.20	1.39	0.85-2.26
	Resilience	-0.29	0.26	0.24	0.75	0.46-1.21
Environmental characteristics	Self-Regulating Environment	0.25	0.19	0.18	1.29	0.98-1.86
	Expectations from coach	0.03	0.07	0.68	1.03	0.90-1.17
	Expectations from family	-0.00	0.05	0.97	0.99	0.90-1.10
	Attended last national camp for talents. 1: Yes 2*: No	2.84	0.39	0.00	17.13	7.94-36.94

*Reference group.

After conducting all the binary logistic regression analyses, the age constant stayed significant ($p < 0.01$), indicating that age should be included as a control variable for variance in the data. The first model included variables to measure the players' engagement in practice. The model was found to be statistically significant, χ^2 ($df = 10$, $n = 701$) = 52.256, $p < 0.001$, indicating that it could distinguish between players becoming elite and non-elite. The Cox and Snell R square and Nagelkerke R Squared values indicated that the whole model explained between 7.2% and 10.5% of variance of which players became elite or non-elite. Overall, 74,6% of the players were correctly classified. The results showed that players becoming elite had a 1.18 greater chance of having more weekly hours in organized practice, $p < 0.05$, and additionally, tendencies that players becoming elite spent fewer months a year on other activities like football, $p = 0.06$. However, there were not found any differences in statistical probability concerning the rest of the variables.

The second model, including predictors for goal for level and goal-directed attributes, was statistically significant, χ^2 ($df = 6$, $n = 519$) = 66.90, $p < 0.001$. This suggested that the model could distinguish between elite and non-elite players based on their goal for level and goal-directed attributes. The Cox and Snell R square and Nagelkerke R Squared values indicated that the whole model explained between 12.1% and 17.5% of variance of which players became elite or non-elite. Overall, 74.8% of the players were correctly classified.

There was no difference in predictive probability of becoming elite regarding the number of practice sessions the players were weekly willing to perform or on scores of task- and ego orientation. Regarding the players' goal for level (1: Europe, or 2: Norwegian Premier League and lower), the odds of having Europe as a goal for level was among the elite group 2.66 times as high as among non-elite, $p < 0.01$. Further, the results showed that players that were more certain of reaching their goal and more certain that they would do everything it takes to achieve that goal had, respectively, 1.12 and 1.23 greater chances of belonging to the elite group, $p < 0.05$.

The third model, including psychological characteristics, self-regulatory parameters' reflection, evaluation, planning, and resilience, was statistically significant, χ^2 ($df = 4$, $n = 442$) = 27.00, $p < 0.001$. This suggested that this model could distinguish between elite and non-elite players based on the psychological

characteristics of self-regulation and resilience. The Cox and Snell R square and Nagelkerke R Squared values indicated that the whole model explained between 5.9% and 8.4% of variance of which players became elite or non-elite. Overall, 71,1% of the players were correctly classified. In the full model, no statistically significant difference was found in the predictive probability of scoring high on the self-regulatory parameters or low on resilience (i.e., indicating a higher degree of resilience). However, the elite group still had 1.71 greater odds of scoring higher on the self-regulatory parameter of *reflection* than the non-elite group, $p=0.07$.

The fourth model included the environmental factors of being in a self-regulating friendly environment, players' perceived expectations from their coach and family, and if the player attended the last national talent camp. The model was statistically significant, $\chi^2 (df = 5, n = 663) = 87.11, p < 0.001$, suggesting that the model could distinguish between players becoming elite and non-elite based on the included environmental factors. The Cox and Snell R square and Nagelkerke R Squared values indicated that the whole model explained between 12.3% and 18.0% of variance of which players became elite or non-elite. Overall, 78,1% of the players were correctly classified. No statistically significant differences were found in chances of becoming elite or non-elite based on being in a self-regulatory environment or by perceived expectations from coach and family. Not surprisingly, it was found that players becoming elite had 17.13 greater odds of attending the last national talent camp, $p < 0.01$.

Discussion

Longitudinal prospective studies of players' career success have been limited and are much warranted (Gledhill et al., 2017, p. 109). Hence, the main aim of this study was to explore the practice histories and psychosocial factors associated with future success in professional Norwegian adult football players.

Demographic differences between elite and non-elite players

There were no significant differences in birth date distribution between players becoming elite or non-elite. Considering that all the young players participating in this study were already enrolled in a youth football academy in a professional club in Norway, we may assume that they already had been through selection processes based

on maturation, thus explaining why there were no differences in birth quartile. Research has consistently shown that young athletes born early in the selection year have a distinct advantage because they are older, bigger, faster, stronger, and more mature (Musch & Grondin, 2001, p. 147). As a result, they are more likely to be viewed as "talented" and subsequently selected for talent development programs (Kelly et al., 2020, p.1).

The demographics showed, as expected that more players between the two success groups (i.e., elite and non-elite) were born in the first two quartiles of the year, supporting the assumption that they may have been given better opportunities to develop (e.g., better coaches, facilities) than players born in the last two quartiles of the year earlier in their careers (Sæther, 2017, p.16). However, this should be interpreted cautiously as birth date distributions only indirectly measure growth and maturation.

Players that became elite did not have more siblings or more divorced parents. Van Yperen (2009, p. 326) suggested that having more siblings may increase the players' social skills through a bond of strong ties of support. Another argument was put forth by Sarkar and Fletcher (2014, p. 1430), advocating that having divorced parents may help develop coping skills through the individual's lack of support. Our study supports none of these claims.

When examining what person meant the most for the players' careers, it was evident that parents and fathers were important. This finding supports existing research stating the importance of the parent's role, especially fathers, in different phases of development in male youth football players' careers (Clarke et al., 2016, p. 5).

At the time of the initial data collection, players that became elite had been overrepresented in the Norwegian FA's last national talent camp (i.e., "Equinor Talenteir") compared to non-elite players. Research has consistently found evidence addressing the difficulties of predicting late success based on early identification and participation across sports (Barreiros et al., 2014, p. 179), especially regarding participation at international youth levels in football (Herrebrøden & Bjørndal, 2022, p. 1).

Participating at the "Equinor Talenteir" in Norway (i.e., a national initiative) is not directly comparable to participation at international youth levels. Still, it would be

plausible to assume that the overrepresentation of players becoming elite in this national initiative would not be as apparent as it is. One could argue that the overrepresentation of elite players could be expected in this study, considering that players becoming elite were also found to be initially older and had better contracts than non-elite players, meaning they were closer to participating in senior professional football.

Differences in practice histories between elite and non-elite players

After controlling for age, both analyses (i.e., ANCOVA, binary logistic regression) showed that players becoming elite only had significantly more weekly hours in organized practice than non-elite, as the rest of the variables for practice engagement were non-significant. This is similar to the study of Haugaasen et al. (2014, p. 341), who found that young football players categorized in youth academies as professional (i.e., by having a professional contract) reported to have participated in more hours of organized practice at early age categories. In an eight-year follow-up of three age cohorts, Sæther (2017, p. 13) likewise found that players becoming professional reported higher numbers of weekly-organized training sessions. The result from the present study supports research highlighting the importance of football-specific practice and that players in elite youth academies often follow an early specialization pathway with high-intensity practice (Ford et al., 2012, p. 1662).

Even though age as a measure for initial performance level was controlled for in both analyses, it is plausible to assume that the difference in weekly hours in organized practice exists due to the large differences in initial performance level, where players becoming elite may have for a larger part of their career been a part of a talent development program emphasizing specialized training. This assumption can be supported by Haugaasen et al. (2014, p. 336) study, which found that players' becoming professionals accumulated more hours in coach-led practice at the youngest age categories.

It may also exist interindividual differences between players becoming elite and non-elite concerning perceptions of what organized practice is defined as (i.e., due to differences in initial performance level/professionalism) at the time of testing, a problem often occurs when players retrospectively recall practice histories from childhood (Hendry & Hodges, 2019, p. 4). However, it is plausible that differences in

perceptions among the participants even themselves out, meaning that “false” reports may exist across both success groups (i.e., elite, non-elite).

The results of the player’s practice engagement showed that overall, players becoming elite and non-elite engaged in large amounts of football-specific practice, including football-specific play (cf. Haugaasen & Jordet, 2012, p. 196). These findings support the studies of Haugaasen et al. (2014, p. 336) and Johnson et al. (2022, p. 6), as the present study found no significant differences in all but one (i.e., weekly hours of organized practice) of the variables for football-specific practice and football-specific play. The present study’s findings are to some degree contradictory to the study of Hornig et al. (2016, p. 96), who found that successful players (i.e., being on the National Team) in Germany had more non-organized leisure in childhood and only engaged more in organized football practice at age 22+ years.

The contradictory findings could, however (again) exist since the present study did not examine practice engagement within different age categories, and that it may have existed differences in perceptions individually but also across the two studies on definitions and measurements of practice engagement (e.g., the study of Hornig et al. (2016, p. 98) adapted a questionnaire from Güllich (2014), and the present study adapted the questionnaire from Ford et al. (2009)). The inconsistent findings regarding practice engagement reflect the importance of examining cultural and organizational contexts, as they produce different developmental paths and participation histories in sports based on deeply embodied and encultured value judgments facilitating the possibility of future success (Røsten et al., 2023, p.7)

The findings from the present study on the role of football players’ practice engagement for future success in professional adult football (i.e., little to no differences between success groups elite and non-elite in Norway), supported by existing research (c.f. Williams et al., 2020), indicate that other factors (e.g., social, environmental) should be taken into consideration when examining which football players become the best (i.e., reaches professional adult football) (Gledhill et al., 2017, p. 94).

The present study examined a few selected psychosocial factors (i.e., players’ goals, goal orientation, self-efficacy attributes, ability to self-regulated learning, resilience, to what degree they were in a self-regulation-friendly environment, and

perceptions of expectations from important people around them). It is important to note that these measures say little about the cultural and societal context in which the players were a part of during development.

Differences in psychological measures between elite and non-elite players

Players that became elite reported significantly more ambitious goals (i.e., Europe or higher vs. Norwegian Premier League or lower) than players becoming non-elite. This is expected, as it is plausible to believe that initially, older, and better players (i.e., already had a professional contract) set higher goals for themselves, considering they are also closer to participation in senior professional football. Research supports this, as it is evident in sports that coaches can create self-fulfilling prophecies through high expectations towards athletes at higher levels, a phenomenon referred to as the Pygmalion effect (Hancock et al., 2013, p. 633).

Task orientation or ego orientation did not differentiate between players becoming elite and players becoming non-elite. However, the results indicate that all players score high on task orientation, similar to the study of Höner and Feichtinger (2016, p. 24), who found that high performers in male youth football (i.e., 16 years) are more task-oriented. Since all the players in the present study were already part of a youth football academy for a professional club in Norway, they all may have shared similar adaptive motivational tendencies (e.g., the belief that hard work pays off) linked to being task-oriented, traits that coaches and practitioners may look for in selection processes.

Supporting this assumption, Huijgen et al. (2014, p. 24) found no differences in goal orientation (i.e., task-oriented and ego-oriented) when examining deselected and selected male adolescents aged 16-18 years participating in a talent development program in the Netherlands. It is plausible that showing more tendencies of being task-oriented is a key factor in early selection processes. However, it may not differentiate success (i.e., reaching professional adult football) and failure (i.e., not reaching professional adult football) when you are first accepted into the system.

In this respect, one could argue that the system the players are enrolled in produces specific behaviors, standards, and values in each player they select (Øydna & Bjørndal, 2022, p. 1). Additionally, the finding that task orientation or ego orientation

did not differentiate players becoming elite and non-elite may be due to the inconsistent use of questionnaires when examining goal orientation (Ivarsson et al., 2020, p. 419), thus makes us inclined to interpret the relationship between task orientation and future success in professional adult football plausible at best.

The analyses further showed that players becoming elite were significantly more certain about reaching their goal for level (i.e., Europe and higher or Norwegian Premier League and lower) and were more certain about doing everything it takes to achieve that goal. The questions measuring these traits were in the present study formulated based on self-efficacy theory (Bandura, 1986), an approach within the social-cognitive framework well-established as one of the most influential psychological constructs mediating achievement in sports (Feltz et al., 2008, p. 4).

In this context, self-efficacy beliefs underpin what goals the players set for themselves, their effort, perseverance, and resilience to failure (Toering et al., 2012, p. 25). The results from these questions should be interpreted cautiously, as they are not validated for measuring athletes' self-efficacy beliefs. However, it is plausible that players becoming elite might have been more able to persevere through difficulties throughout their development (e.g., the transition to senior professional football) by believing in their ability to successfully execute necessary behaviors (e.g., learning instead of quitting when faced with criticism) for achieving a desired outcome (i.e., playing in senior professional football).

The study of Blake and Solberg (2023, p. 11) moderately supports this assumption and found that self-efficacy is of great value for young football players being a part of a professional youth football academy when faced with negative outcomes (e.g., psychological distress, impaired social and emotional development) during their time within the academy system. The results portray some degree of face validity. Still, the differences in initial performance level between the players participating in this study may have resulted in these results, as players already at higher levels may have had greater professionalism in their careers, thus interpreting the formulated questions accordingly. Nonetheless, the formulated questions differentiated the two success groups (i.e., elite, and non-elite) and could therefore be included in future research for validation.

Players becoming elite scored lower on the resilience scale, indicating higher degrees of resilience than non-elite players; however, the players did not differentiate in odds of belonging to the elite group based on their score. To our knowledge, this study is the first to use the READ resilience scale (Hjemdal et al., 2006) in a prospective study of elite sport success in football, meaning there are no other empirical studies to compare the results from this study with. Research in sports often refers to resilience as coping behaviors (e.g., Mills et al., 2012, p. 1597). In football, Van Yperen (2009, p. 324) found that players becoming professional are more prominent to do something about stressful situations proactively. It is not possible to draw any conclusions regarding this finding and the one from this study.

Based on both analyses conducted in the present study, it is also difficult to determine if an actual difference in resilience (when seen as a trait) exists between the two success groups. However, considering the low p -value < 0.001 found in the ANCOVA compared to the other variables (e.g., certainty of reaching their goal, self-regulation *reflection*) with similarly low p -values using the same analysis, it is plausible that players' becoming elite comparably exhibit higher degrees of resilience.

To get the most out of their potential young players must show adaptiveness, perseverance, and initiative, processes established in the literature as self-regulated learning and seen as vital because they help athletes learn more effectively (Toering et al., 2011, p. 110). The analyses revealed that elite players scored significantly higher on all parameters (i.e., reflection, evaluation, and planning) than players becoming non-elite. However, based on their score, the players did not differentiate in odds of belonging to the elite group. The parameter of reflection showed a tendency ($p=0.07$) nonetheless.

However, the high f -values found for all the parameters of self-regulated learning (i.e., reflection, evaluation, planning) in the ANCOVA indicates that, to some degree, an actual difference between the two success groups may exist, especially for the reflection parameter. Large f -values were similarly observed when examining the players' certainty of reaching their goal and doing everything it takes to achieve it; these variables were also statistically significant in their binary logistic regression model. In this respect, one could argue, though plausible, this strengthens the credibility found in the ANCOVA for the parameters of self-regulated learning.

Similarly to the present study, Toering et al. (2009, p. 1509) found that reflection were more often associated with young football players being defined as elite than players being defined as non-elite. Toering et al. (2012, p. 1) likewise found that young football players selected to represent their district or country (Netherlands) scored higher on reflection than those not selected. It has been suggested that elite players use reflection to become aware of their strong and weak points and, by reflection are more able to translate this awareness into action (e.g., behaviors aimed to improve their performance level) (Toering et al., 2009, p. 1509). Hence, elite players create a better learning environment for themselves (i.e., by using better strategies) in which they learn, adapt, and do things better next time (p. 1514).

Erikstad et al. (2018, p. 2304) examined youth football players aged 14-15 years in Norway selected to a national development program and, in this respect, found that players scoring higher on self-regulation increased their involvement in peer-led football practice and adult-led football practice during childhood. This finding can additionally support the assumption that players becoming elite in the present study ended up as best, as they may have used better strategies for development (e.g., by reflecting on their thought processes and methods) while conducting different types of football-specific practice.

Additionally, Erikstad et al. (2018, p. 2305) found that highly self-regulated players were more likely to be selected for national initiatives. This supports the results from the present study on self-regulated learning, as players in the current research becoming elite were similarly found to score higher on especially reflection. Also, this supports the finding that players becoming elite in the present study were found to more often have attended the last national camp for talents. These findings underpin the importance of self-regulated learning, as it may be a trait practitioners look for in selection processes.

By more often attending the last national talent camp, thus initially having a greater degree of professionalism in their career, players becoming elite may have had better opportunities to develop psychological skills, making them more likely to better cope with the difficult transition to senior professional football (Gledhill et al., 2017, p. 94). Differences in psychological measures, therefore, may reflect social influences and

that elite sports cultures (i.e., elite youth football academies) produce and select the same psychosocial traits in players.

Environmental characteristics

To measure some of the aspects covering the players' opportunities to develop, an instrument was used to measure the degree to which they were in a self-regulating friendly environment. The main goal of this instrument was to measure player-coach relationships, self-regulated encouragement, and self-regulated opportunities. The ANCOVA revealed that players becoming elite scored significantly higher on the instrument. However, the binary logistic regression model for environmental factors showed no significant differences between the two success groups in odds of scoring high on the instrument.

The variables of expectations from the coach and family were also included in the binary logistic regression model for environmental factors. As these variables were found to not be significant in both analyses, they may have confounded the results for the scores on being in a self-regulating friendly environment. Considering that the instrument used for measuring being in a self-regulating friendly environment was developed correspondingly to aspects of self-regulated learning in youth football (c.f. Toering et al., 2013) and that the scores on especially the parameter of reflection were found to differentiate the two success groups, it is plausible that players becoming elite may have more often been in a self-regulating friendly environment, where they could have been given better opportunities to develop (e.g., by having more educated coaches).

Partially supporting this assumption, the study of Söderström and Garn (2022, p. 1) found that players who got trained in elite training environments during adolescence were twice as likely to play elite football (i.e., the two highest football divisions defined as elite by Swedish Football Association) at the age of 21, examining girls and boys selected to a national football talent program at the age of 15. However, this relationship is complex to interpret, as it is in this study, and it is generally unclear how different elite training environments operate considering development.

For example, it has been shown in Norwegian youth football academies that it exists differences in perspectives on development (e.g., the collaboration between school

and academy, including players in their developmental process, goal setting, planning, and communication) between the top five ranked football academies and bottom five ranked football academies (Gangsø et al., 2021, p. 1). To further explore the relationship between training environments and participation in professional adult football, the instrument used in the current study needs to be validated (e.g., include scores for the sub-scales), where differences in perspectives on talent identification and development within the clubs should be considered.

Lastly, one could assume that since there was a significant difference in initial performance level, players already having professional contracts (i.e., also referring to most of the players' becoming elite) would also experience higher expectations from their coach and family. However, as there was no difference in perceived expectations from both coach and family in both analyses, other variables may have affected this relationship, for example, the developmental milieu the players were a part of.

Players becoming elite may have been experiencing higher expectations. However, by being in a better developmental milieu and developing knowledge of how not to be affected by high expectations and pressure (i.e., having more educated coaches and staff), these players may rate their perceived expectations similarly to players with a lower initial performance level. It is debatable whether the scale used for measuring the players' perceived expectations from their coach and family nuanced expectations in the best way possible, as it wasn't validated and considering that it most likely exists individual and contextual differences.

Limitations

In this study, the categorization of becoming elite and non-elite was based on the definition of professional football in Norway, and players were categorized as becoming elite if they had played in the top two divisions. The categorization was done this way to maintain statistical power, as it allowed larger groups of participants. However, becoming a professional football player in Norway is different from reaching top professional levels in other countries (e.g., England, Spain), as Norway currently is in 16th place at the UEFA Association Club Coefficients (uefa.com, 2023). The categorization applied in this study limits the generalizability of the findings, in addition to the existing cultural differences in approaches to talent identification and

development across countries (e.g., the heavy emphasis on early specialization in England) (Andersen et al., 2015, p. 1). Future research should use a standardized “making it in football” measure for better generalizability.

The definition ‘Super Elite’ level from the study of Herrebrøden and Bjørndal (2022, p. 3) could be used adequately, where per definition, players need to have one appearance at the senior international level, Champions League or Europa League. Lastly, the testing procedure may affect the results from the present study, as it took approximately two hours to complete the entire questionnaire (although it differed across players). Considering that the players may have varied in their professionalism towards football, filling out the questionnaire may have constituted differences concerning the understanding of professional expressions, and filling it out became boring for some players, leading them to rush through the questionnaire.

Concluding thoughts

To summarize, the main aim of the present study was to explore practice histories and psychosocial factors related to future success in professional adult football using a prospective design where young football players’ career success was measured twelve years after testing. The demographics showed that young football players aged 12-21 years enrolled in elite youth football academies in Norway are often born in the first two quartiles of the year and see their father as the most important person for their career. Players becoming elite were initially older, had better contracts (i.e., ‘pro contract’ vs. ‘non-pro contract’), attended the last national camp for talents more often, and had higher goals for level (i.e., Europe or higher vs. the Norwegian Premier League and lower).

The study results showed small to no differences between the two success groups in practice engagement, but players’ who became elite had more weekly hours in organized practice. All players engaged in large amount of football-specific practice. Players becoming elite was more certain about reaching their goal for level and doing everything it takes to reach that goal. They scored higher on self-regulation, especially the reflection parameter, arguably showed higher degrees of resilience, and may have more often been in a self-regulating friendly environment within their club. The result from the present study indicates that players reaching professional adult football in

Norway set higher goals for themselves, may have greater beliefs in themselves, and may use better strategies for development and learning (e.g., reflection).

The suggested causal explanations should be interpreted with caution because they may be due to significant differences in initial performance level (i.e., professionalism towards football) and within club differences in developmental perspectives (i.e., regarding talent identification and development). Future research should, therefore, more critically include the context in which the players are a part (e.g., within club differences in perspective on talent identification and development) and examine differences in different age categories. Finally, the present study supports the importance of psychosocial factors (Gledhill et al., 2017, p. 94) and advocates that talent development in football must be seen as a long-term process where players need to be in an environment emphasizing development (Sæther, 2017, p. 17).

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1. Theoretical framework

1.1. The Theory of Deliberate Practice

Most researchers and practitioners agree that expert-level performance is only possible with a long-term commitment to training and practice (Baker & Young, 2014, p. 135; McCardle et al., 2019, p. 112; Williams & Ford, 2008, p. 4). Since its introduction by Ericsson et al. (1993), the theory of deliberate practice has gained significant attention in achieving expertise. When studying musicians (pianists, violinists) using retrospective recalls from the beginning of practice, Ericsson et al. (1993) found that the level of performance attained was monotonically related to accumulated practice (Helsen et al., 1998, p. 13). Ericsson et al. (1993) propose that deliberate practice over an extended period is required to develop expertise, not just training of any kind.

Deliberate practice refers to activities that demand mental and physical effort, do not result in instant gratification on a personal, social, or financial level, and are performed to enhance performance (Baker & Young, 2014, p. 135). Deliberate practice tasks are intentionally created or chosen to achieve goals, provide opportunities for feedback (e.g., from coaches), and are repeated to allow for adaptations to practice performance (McCardle et al., 2019, p. 113). As a prerequisite for deliberate practice, individuals can master skills more easily and progress with access to informative feedback from educated coaches and opportunities for repetition (Baker & Young, 2014, p. 141).

Previous amounts of deliberate practice are predicted to be related directly to current performance levels, and the most significant performance improvements are likely to be associated with the largest weekly amounts of deliberate practice (Ward et al., 2007, p. 120). Individuals who accumulate the largest number of deliberate practice over time are, therefore, more likely to attain expertise. Moreover, the theory of deliberate practice has gained support in the sports psychology literature over the past few decades, with numerous studies supporting its contribution to expertise development in different ways (Baker & Young, 2014, pp. 137-139; Helsen et al., 1998, p. 12; Moesch et al., 2011, p. 288).

However, the concept of deliberate practice has been criticized, particularly in how it has been operationalized and applied in practice (Macnamara et al., 2014, p. 1615). One major criticism is that the theory places too much emphasis on individual effort and ignores the role of environmental and social factors, such as access to resources and social support networks

(Güllich & Emrich, 2014, p. 395). Supporting the criticism, recent research has found that deliberate practice accounted for only 18% of the variance in sports performance and only 1% among elite performers (Macnamara et al., 2016, p. 333). In football, the main findings indicate that professional football players overall engage in large amounts of football-specific practice (Haugaasen et al., 2014, p. 336). Considering that the large participation base in football makes achieving expertise difficult, there seems to be a greater need for early football-specific activity in large volumes during development (Haugaasen & Jordet, 2012, p. 178).

1.2 The Developmental Model Of Sports Participation (DMSP)

Participation in sports is a valuable activity that offers numerous advantages for people of all ages, including benefits to social interaction, psychological well-being, and physical health (Snedden et al., 2019, p. 675). The Developmental Model of Sports Participation (DMSP) proposed by Côté et al. (2007) is an influential framework for understanding how people progress through different stages of sports engagement as they develop and grow. The DMSP presents three pathways to elite participation in sports that consider young people's mental and physical development (see Figure 1) (Côté et al., 2009, p. 8).

In the first two pathways of the DMSP, children aged 6-12 years engage in sampling consisting of participation in various sports that involve high levels of deliberate play and low levels of deliberate practice. Contrastingly to deliberate practice activities, deliberate play is characterized by engagement in "fun" activities (Côté et al., 2007, p. 177). Deliberate play is expected to augment variable playing experience, maximize joy, and support long-term motivation (Baker et al., 2009, p. 82). The children wishing to participate in sports recreationally continue from the sampling years into the recreational years starting from the age of 13. Individuals interested in elite development will continue to the specializing years at the age of 13-15, then into the investment years from the age of 16. To support the pathway of diversified involvement, Côté et al. (2007) argued that it may provide a diverse range of physiological abilities and transferable technical and perceptual-tactical skills across related sports (Hornig et al., 2016, p. 97).

Sports programs still include little deliberate practice throughout the recreational years but now offer age-appropriate competition. On the other hand, the specializing and investment year is defined by participation in fewer sports, less time in deliberate play, and more time in

deliberate practice. The DMSP also suggests that following the sample years, children can change their involvement to play sports for fun or stop playing them altogether. The third and last path of the DMSP involves specializing in one sport starting around age six and consist of high levels of deliberate practice and low levels of deliberate play. Research in the last 15 years on the DMSP has shown sufficient support to warrant strong recommendations regarding the role that early diversification and deliberate play have in the development of a sport system that values mass participation, personal development through sport, and athletic performance (Côté & Vierimaa, 2014, p. 68).

1.3 Achievement goal theory

Motivation is widely known as a construct influencing initiation, direction, perseverance, and quality of goal-directed behavior. Over time, achievement goal theory has been established as a theoretical framework for describing athletes' motivation and behavior in sports. The essence of achievement goal theory specifies what goals, defined as a purpose or a reason, that direct achievement-related behavior (Maehr & Zusho, 2009, p. 5). This means that achievement goal theory is less concerned about *what* individuals want to achieve and instead focuses more on *why* individuals want to achieve that goal. Achievement goal theory postulates that athletes' goal orientation can be classified into task- and ego orientation (Harwood et al., 2000, p. 237). While ego orientation focuses on exceeding others and demonstrating better performance, task orientation emphasizes acquiring skills, improving performance, and personal development (Elliot & Church, 1997, p. 218).

For example, why would a young football player want to win the Champions League? In achievement goal theory, there are two possible reasons. First, a young football player may want to win the prestigious and highly competitive tournament because they want to learn and better understand the game of football, in which winning the Champions League would indicate mastery in football. Or a young football player may want to win the Champions League to demonstrate to others (e.g., family and friends) that they were better than them, in which winning the Champions League indicates greater abilities in football but not necessarily mastery of the game.

According to achievement goal theory research, athletes who adopt a task orientation exhibit more adaptive behaviors, such as seeking out challenges, being risk-takers, and persevering in the face of setbacks (c.f. Duda, 2001; Maehr & Zusho, 2009, p. 7). On the other hand, athletes who adopt an ego orientation frequently engage in more maladaptive behaviors, such as

avoiding challenges, giving up quickly, and feeling a lot of stress and worry (Roberts et al., 2007, p. 7). Studies in football indicate that male youth football players are more task-oriented, meaning these players exhibit more adaptive motivational tendencies, such as believing that hard work pays off (Höner & Feichtinger, 2016, p. 24). However, empirical research shows inconsistent findings when examining the relationship with future success. For example, the study of Huijgen et al. (2014, p. 8) found no association between task orientation and success when examining deselected and selected male adolescents aged 16-18 years being a part of a talent development program in the Netherlands.

1.4 Self-Efficacy

To excel in sports, it has been acknowledged that athletes must be confident in their ability to perform, cope with diverse challenges (e.g., performance pressure), and sustain the hard work necessary to perfect their skills (Feltz et al., 2008, p. 4). The theory of self-efficacy by Bandura (1977) has been long recognized as a cognitive explanation for differences in individuals' ability to carry out challenging tasks, also in sports. Rather than being concerned about an individual's abilities, self-efficacy theory focuses on judging what the individual can do with their abilities. According to the theory, self-efficacy influences activities individuals choose to perform, how much effort they put into them, and how persistent they are when faced with failure or other aversive stimuli (Moritz et al., 2000, p. 280).

The theory of self-efficacy by Bandura (1977) was developed within the framework of social-cognitive theory. Within this framework, individuals operate as proactive agents in regulating their cognition, motivation, behavior, and emotions rather than being passive reactors to the environment (Feltz et al., 2008, p. 4). In social-cognitive theory, almost all appropriate human behavior is regulated by forethoughts, and through practice on this, individuals can motivate themselves and guide their actions in an expected proactive way (Bandura, 1991, p. 248). In social-cognitive theory, self-regulatory systems are the root of causal processes where forethoughts and self-regulatory mechanisms produce intentions and guidance for appropriate actions.

The social-cognitive theory also proposes a web of causal structures that are influenced by individuals' behavior (e.g., perseverance), personal factors (e.g., knowledge and values), and environmental conditions (e.g., interactions with others) (Feltz et al., 2008, p. 5). For example, family members' feedback can influence what young football player believes about what they can achieve and the goals they set, which can affect the effort the young football

player puts in to reach those goals. In the framework of social-cognitive theory, self-efficacy represents the role of self-referent beliefs as a core factor determining individuals' goal-directed behavior (p. 5). In this respect, individuals with higher self-efficacy are seen as not afraid to pursue challenging goals, to better cope with pain, and persevere through setbacks (p. 5).

The theory of self-efficacy was initially meant to explain different results using different methods for treating anxiety in clinical psychology but has been applied to other domains such as health and exercise behavior and sport and motor performance (c.f. Moritz et al., 2000). In this context, self-efficacy is an individual's belief in one's capabilities to organize and execute the action required to produce given attainments (Feltz et al., 2008, p. 6). Overall, self-efficacy seems essential for achieving success in sports, where coaches can help individuals develop their self-efficacy by setting achievable goals, providing feedback, and helping them develop the necessary skills and strategies to succeed in their sport. Supporting this, Moritz et al. (2000, p. 280) meta-analysis based on 45 studies examined the relationship between self-efficacy and performance in sports and found a clear significant relationship between self-efficacy and performance but also highlighted that self-efficacy is contextually situated.

1.5 Self-regulated learning

The term self-regulation has historically been characterized by different conceptualizations (e.g., Bandura, 1991; Baumeister & Vohs, 2007; Zimmerman, 1989) and has therefore been defined differently in the literature. However, in the context of learning and development, the concept of self-regulation proposed by Zimmerman (1989, 2006) has been used most frequently (McCardle et al., 2019, p. 116). Zimmerman (2008, p. 166) describes self-regulation as the extent to which individuals are metacognitive, motivationally, and behaviorally proactive participants in their learning process. Zimmerman (2000) defines self-regulation as self-generated thoughts, feelings, and actions that are planned and cyclically adapted to achieve personal goals (Tedesqui & Young, 2015, p. 30). In this concept, individuals know how to attain their goal of performance improvement, are motivated, and take action to achieve goals (Toering et al., 2009, p. 1509).

Zimmerman (2006) model of self-regulated learning is cyclical in nature, which means that change in one of the phases will influence the rest of the phases. The model consists of three

cyclical phases: forethought, performance, and self-reflection. In the forethought phase, motivational and task analysis processes help prepare the individual for learning, practice, and performance. The performance phase is about individuals' self-control and self-observation processes that help learners optimize and monitor their learning attempts. Lastly, self-reflection involves self-reaction processes referring to individuals' self-evaluation and reactions to performance when learning, which will influence subsequent forethought processes and restart the cycle (Tedesqui & Young, 2015, p. 30).

In sports, self-regulatory processes will not result in high levels of expertise quickly but can assist an individual in acquiring knowledge and skills more effectively (Toering et al., 2009, p. 1509). Through extensive research (for a review, see McCardle et al., 2019), it has been acknowledged that the best athletes engage in processes of self-regulated learning and that self-regulated learning competencies have the potential to be trained. In football, the self-regulatory parameters of reflection and effort have been associated with higher performance levels among elite youth football players (e.g., Toering et al., 2012; Toering et al., 2009).

1.6 Resilience

The fundamental meaning of resilience is that it implies positive adaption, or the ability to maintain or regain mental health, despite experiencing adversity (Herrman et al., 2011, p. 259). Numerous definitions of resilience have been put forth in the psychology research literature over the last three decades based on alternative conceptualizations of resilience as a process or a trait (Fletcher & Sarkar, 2012, p. 669). Hjemdal et al. (2006, p. 84) describe resilience as 'protective factors, processes, and mechanisms that, despite experiences with stressors shown to carry significant risk for developing psychopathology, contribute to a good outcome'. When attempting to establish a grounded theory of psychological resilience in Olympic champions, Fletcher and Sarkar (2012, p. 675) found that a complete understanding of resilience among Olympic champions will only be obtained if studied within the context of the stress process.

They conceptualize resilience as the interactive influence of psychological characteristics (e.g., positive personality, motivation, confidence, focus, and perceived social support) within the context of the stress process. Further, they defined psychological resilience as 'mental processes and behaviors promoting personal assets and protecting an individual from the potential negative effect of stressors' (p. 675). In their conceptualization of psychological resilience, they encapsulate aspects of both trait and process conceptualizations of resilience;

regarding the trait conceptualization, mental processes and behavior enable individuals to adapt to situations they find themselves in, and regarding the process conceptualization, it recognizes that resilience is a capacity developing over time in the context of person-environment interactions (Sarkar & Fletcher, 2014, p. 1419).

In sports, resilience is seen as a critical factor in development and performance, as it enables athletes to cope with adversity and setbacks (e.g., not being selected) and bounce back quickly and effectively (e.g., from injuries) (Galli & Gonzalez, 2015, p. 243). In the study of Holt and Dunn (2004, p. 214), they found that resilience, seen as a set of behaviors, was associated with success in football. They explained that successful football players overcome personal (e.g., confidence) and contextual obstacles (e.g., pressure) by using positive coping strategies such as positive responses, showing confidence, and thriving on stress. The prospective study of Van Yperen (2009, p. 324) examined which football players become the best and additionally found that problem-focused coping, where players manage internal (e.g., motivation) and external demands (e.g., expectations) through thoughts and behaviors, predicted career success in professional adult football in the Netherlands.

2. Methods

2.1 Prospective study design

This study used a prospective design, where players' career success was measured twelve years after testing. Prospectively following the players forward through time allows us to more easily demonstrate possible relationships between baseline measures and outcomes (These, 2014, p. 205). In the football literature, prospective studies of players' career success have been limited and are much warranted (Gledhill et al., 2017, p. 109). Therefore, the methodology used in this study has been inspired by Van Yperen (2009), one of the few studies examining factors (i.e., psychological) that predict career success in football.

2.2 Categorization

This study used the definition of professional football in Norway to classify the players as elite (i.e., playing in the top two divisions) or non-elite based on playing in the top two divisions in Norway (Toppfotball.no, 2022). It should be noted that there were also a small

number of players at higher levels, such as in a top-five league in Europe, who were also included as becoming elite.

2.3 Sample

Twelve years ago, more than 700 players took part in the national survey ($N= 706$; $M_{age} = 16.20$, $SD= 1.8$), and they were all a part of an academy within one of the 16 Norwegian Premier League clubs. Except for a few instances where people withdrew, all Norwegian Premier League clubs and their players took part, making the survey representative of the entire population rather than simply a limited sample. During the data collection, all participants received written information about the project and provided written consent before participation. Parental permission was required for players under the age of 16. In these consents, players marked if they agreed to participate in future studies and storage of their data for years to come.

2.4 Data collection and Measurements

The article's methodological section thoroughly explains the data collection and measurements used (p. 7-9). See Appendix A and B for written information letter and NSD approval.

2.5 Data analysis

Initially, the information gathered 12 years ago was entered manually into SPSS version 18.0 from the written surveys. The test administrators or those who transferred the questionnaire into SPSS reviewed and corrected the data file for typing errors, minimum and maximum values, and any comments made. The classification of being elite and non-elite was then manually entered for each respective player into the original SPSS file twelve years later. After that, the data were examined using SPSS version 28.0.

2.6 Statistical reflections and considerations

The demographic analysis showed that more players becoming elite (39.8%) initially had professional contracts as opposed to non-elite (2.6%), suggesting players' initial performance levels differed at the time the data were collected. The players' initial type of contract was therefore seen as a possible confounder in subsequent analyses. As initial type of contract was measured as a dichotomous categorical variable, a factorial ANOVA was conducted to

examine the main effects of becoming elite or non-elite, the initial type of contract, and the interaction effects of becoming elite or non-elite and the initial type of contract.

Before conducting the factorial ANOVA, assumptions were examined, such as metric level on the dependent variables, normality check with histogram, Q-Q-Plot, and Kolmogorov Smirnov test, no multicollinearity between the two independent variables, and constant variability in measurement error. When conducting the factorial ANOVA, it was revealed that across the dependent variables, there were no consistent significant main effects for the initial type of contract ($p < 0.05$), nor an interaction effect between level elite or non-elite and initial type of contract. This result suggested that there is a possibility that other factors confound the results. For example, at the time of testing, the age range of the players (i.e., 12-21 years) was wide, especially in terms of how close one is to being regarded as a senior player.

Supporting this assumption, the demographic data shows that players becoming elite were initially older than their opposites ($p < 0.05$). A binary logistic regression found that players with an elite contract originally had 3.23 (95% CI [2.55, 4.07]) greater odds of being older than their counterparts. After meeting assumptions (i.e., no outliers in the dichotomous variable, equal variance, and normally distributed), a point-biserial correlation similarly showed that there was a moderately positive correlation, $r(682) = .50$, $p < 0.001$, between the initial type of contract and age. Therefore, the subsequent analysis included age as a covariate to maintain statistical power. A one-way ANCOVA was considered an adequate statistical test for comparing means across elite or non-elite levels, where scores were adjusted for initial age.

To further explore the relationship between the players' practice histories, psychosocial factors, and future performance levels, binary logistic regression analyses were conducted as it allows the use of categorical and continuous data as predictor variables. Following age as a covariate in the one-way ANCOVA, age as a continuous variable was seen as a control variable in the binary logistic regression models. Assumptions were examined, and no multicollinearity was found between the independent variables, as collinearity diagnosis revealed no variance inflation factor (VIF) over 5. In a pilot analysis, however, age as a continuous predictor variable indicated a poor fit between the models and the data, as the calculated Hosmer-Lemeshow test value was significant ($p < 0.05$).

Therefore, age as a continuous variable was recoded into a categorical variable with two categories (1: 12-17 years; 2: 18-21 years). The categorization was based on how the

Norwegian football association divides youth football (Fotball.no, 2022) and regarded as adequate because players' becoming elite initially were older than their opposites. After recoding age as a continuous variable into two categories, we could conduct the binary logistic regression analyses without violating the Hosmer-Lemeshow test assumptions. Lastly, the linearity of the logits for the independent variables was checked using the Box-Tidwell transformation test (Box & Tidwell, 1962), revealing that the transformed independent variables were linearly related to the log odds, as all transformed independent variables was non-significant ($p > 0.05$).

2.6 Ethics

This study gained ethical approval from the Norwegian Data Protection Authority and was seen as beneficial in the public's interest (see Appendix). Therefore, providing the participants with a written letter about the present study was an acceptable way of informing the players about further participation in the project (see Appendix). Considering the players' consent to keep their data for future research, their original contact information was used to distribute the written information letter about the present study. In the written information letter, the players were again given the possibility to withdraw from the study, where in that case, the players' data was deleted. Four participants no longer wanted to participate in the present study; thus, their data was deleted.

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4. Appendix

4.1 Appendix A

Informasjon om forskningsprosjektet

”En prospektiv studie som utforsker trening og psykososiale faktorer knyttet til fremtidig suksess i profesjonell voksenfotball”

I dette skrivet gir vi deg informasjon om målene for dette forskningsprosjektet og hva prosjektet innebærer for deg.

Formål

Formålet med prosjektet er å identifisere hvilke variabler som er viktige når vi undersøker hvilke fotballspillere som blir best. Forskningsspørsmålet for prosjektet handler om å finne ut av hva sammenhengen er mellom nedlagt trening, psykososiale faktorer, og fremtidig prestasjonsnivå.

Studien er prosjektert som en mastergradsoppgave.

Hvem er ansvarlig for forskningsprosjektet?

Norges Idrettshøgskole er ansvarlig for prosjektet, med professor Geir Jordet som hovedansvarlig.

Hvorfor er du inkludert i studien?

Du får informasjon om å delta fordi du for rundt 12 år siden samtykket til og deltok i prosjektet Tippeliga 14-21. I likhet med deg får alle andre deltagere i prosjektet Tippeliga 14-21 samme informasjon om å delta i dette aktuelle prosjektet.

I tråd med formålet til prosjektet Tippeliga 14-21 har jeg som masterstudent fått tilgang til kontaktopplysninger til alle samtykkende deltagere.

Hva innebærer prosjektet for deg?

Å delta i den aktuelle studien innebærer for deg at jeg som masterstudent får tilgang til alle svar i fra prosjektet Tippeliga 14-21 innhentet for 12 år siden. Det innebærer også at jeg som masterstudent innhenter informasjon om hvilke lag og nivå du har spilt på, basert på offentlig informasjon som finnes på internett.

Du kan protestere

Du kan når som helst protestere mot at du inkluderes i dette forskningsprosjektet, og du trenger ikke å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du velger å protestere.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Jeg som masterstudent vil i likhet med hovedansvarlig for prosjektet ha tilgang til dataen. Ditt offentlige navn, og all kontaktinformasjon vil ikke være synlig i prosjektet da dette er anonymisert. Du som deltager vil ikke, kunne gjenkjennes ved eventuell publikasjon. All data ligger på serveren til Norges Idrettshøgskole. Det er ingen andre parter enn de som innhentet dataen for prosjektet Tippeliga 14-21 for 12 år siden som har tilgang til det aktuelle prosjektet.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet vil etter planen avsluttes 31.05.2023. Når dette forskningsprosjektet avsluttes, vil personvernsopplysningene oppbevares i tråd med formålet til prosjektet Tippeliga 14-21 frem til 2025, og vil være anonymisert, og kun være tilgjengelig for hovedansvarlig for det originale prosjektet Geir Jordet.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg fordi forskningsprosjektet er vurdert å være i allmennhetens interesse, men du har anledning til å protestere dersom du ikke ønsker å bli inkludert i prosjektet.

På oppdrag fra Institutt for idrett og samfunnsvitenskap ved Norges Idrettshøgskole har Sikt – Kunnskapssektorens tjenesteleverandørs personverntjenester vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- å protestere
- innsyn i hvilke personopplysninger som er registrert om deg
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Hvis du har spørsmål til studien, eller ønsker å vite mer om eller benytte deg av dine rettigheter, ta kontakt med:

- Masterstudent v/Norges Idrettshøgskole ved Roy André Dahl Bogen
mail: royandre.d.bogen@gmail.com, telefon: 98413218
- Institutt for idrett og samfunnsvitenskap v/Norges Idrettshøgskole ved Geir Jordet
mail: geirj@nih.no , telefon: 90780250
- Vårt personvernombud: Rolf Haavik mail: personvernombud@nih.no

Hvis du har spørsmål knyttet til vurderingen av prosjektet som er gjort av Sikts personverntjenester, kan du ta kontakt med:

- Personverntjenester på epost (personverntjenester@sikt.no) eller på telefon: 73 98 40 40.

Med vennlig hilsen

Geir Jordet

Roy André Dahl Bogen

(Forsker/veileder)

4.2 Appendix B

31.01.2023, 14:33

Meldeskjema for behandling av personopplysninger



[Meldeskjema](#) / [Tippeliga 14-21 - 11 år senere](#) / Vurdering

Vurdering av behandling av personopplysninger

Referansenummer
335504

Vurderingstype
Standard

Dato
31.01.2023

Prosjektittel
Tippeliga 14-21 - 11 år senere

Behandlingsansvarlig institusjon
Norges idrettshøgskole / Institutt for idrett og samfunnsvitenskap

Prosjektansvarlig
Geir Jordet

Student
Roy André Dahl Bogen

Prosjektperiode
15.08.2022 - 31.07.2023

Kategorier personopplysninger
Alminnelige

Lovlig grunnlag
Allmenn interesse eller offentlig myndighet (Personvernforordningen art. 6 nr. 1 bokstav e)

Behandlingen av personopplysningene er lovlig så fremt den gjennomføres som oppgitt i meldeskjemaet. Det lovlige grunnlaget gjelder til 31.07.2023.

[Meldeskjema](#)

Kommentar
OM VURDERINGEN

Sikt har en avtale med institusjonen du studerer ved. Denne avtalen innebærer at vi skal gi deg råd slik at behandlingen av personopplysninger i prosjektet ditt er lovlig etter personvernregelverket.

RETTLIG GRUNNLAG

Behandlingen av personopplysninger er nødvendig for allmennhetens interesse (forskning), jf. personvernforordningen art. 6 nr. 1 e), jf. personopplysningsloven § 8. Prosjektet gjør nødvendige tiltak for å ivareta de registrertes rettigheter og friheter, jf. art. 89 nr. 1.

BEGRUNNELSE

Formålet med masteroppgaven er å utforske treningsgrunnlag og psykososiale faktorer knyttet til fremtidig suksess i profesjonell voksenfotball 11 år etter at forskningsprosjektet "Tippeliga 14-21" ble gjennomført. Masterstudenten får tilgang til data innhentet i forskningsprosjektet med referansenummer: 26657. Forskningsdeltakerne i "Tippeliga 14-21" fikk informasjon om at dataene kunne bli brukt til oppfølgingsstudier. Lovlig grunnlag i forskningsprosjektet var samtykke. Prosjektansvarlig er samme person i både forskningsprosjektet og masteroppgaven. Masterstudenten skal i tillegg til data fra forskningsprosjektet bruke sosiale medier for å undersøke hvor deltakerne fra det opprinnelige forskningsprosjektet befinner seg nå, 11 år etter deltakelsen. Hensikten med masteroppgaven er å undersøke hvordan de gikk med fotballspillerne som deltok i forskningsprosjektet i 2011. Å gjennomføre denne oppfølgingsstudien har samfunnsmessig verdi fordi det gjør det mulig å i etterkant av forskningsprosjektet kunne identifisere utviklingspotensialet og hente ut prestasjonspotensialet blant unge elitespillere i Norge har hatt.

I vår vurdering har vi lagt vekt på at:

- De får informasjon om behandlingen og sine rettigheter
- Opplysningene brukes kun til prosjektet, ikke andre formål
- Det samles bare inn opplysninger som er nødvendig for formålet
- Kun prosjektmedarbeidere har tilgang til opplysningene
- At behandlingstiden er kort

FØLG DIN INSTITUSJONS RETNINGSLINJER

Vi har vurdert at du har lovlig grunnlag til å behandle personopplysningene, men husk at det er institusjonen du er ansatt/student ved

som avgjør hvilke databehandlere du kan bruke og hvordan du må lagre og sikre data i ditt prosjekt. Husk å bruke leverandører som din institusjon har avtale med (f.eks. ved skylagring, nettspærreskjema, videosamtale el.)

Personverntjenester legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

MELD VESENTLIGE ENDRINGER

Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til oss ved å oppdatere meldeskjemaet. Se våre nettsider om hvilke endringer du må melde: <https://sikt.no/melde-endringer-i-meldeskjema>

OPPFØLGING AV PROSJEKTET

Vi vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!