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ANTHROPOMETRIC CHARACTERISTICS(weight and height) OF YOUNG SOCCER PLAYERS ACCORDING TO THEIR LEVEL OF PLAY

خصائص القياسات الانتربومترية (الوزن والطول) لدى لاعبي كرة القدم الشباب وفقًا لمستوى اللعب(المنافسة)

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Résumé:

The aim of the study is to analyze some anthropometrics parameters (weight and height) among youth Algerian soccer players ranging from U13 to U19 and to compare the players profiles between different competitive divisions (Elite -Sub elite and Amateur) according to Algerian soccer federation . Data from 386 subjects were analyzed (214 E – 95 Sub -77 A). Generally, anthropometric characteristics of different competitive divisions seems similar across all ages, the only exception was registered in U19 , where the elite players were heavier than amateur , in general, Anthropometry measure (weight -height) have shown to be not discriminative between successful and less successful youth soccer players and can't be determinant of talent identification .

informations sur l'article

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Keywords:
- ✓ *anthropometrics*
- ✓ *talent*
- ✓ *soccer*

1. *Introduction*

Soccer is the most popular team sport worldwide. To succeed in soccer, players need to have an optimal combination of a variety of factors including specific body size and composition, physical fitness (aerobic and anaerobic fitness among others) skill, behavioral dimensions, and a sense of the game, labelled as 'game intelligence' (Reilly, Bangsbo & Franks, 2000; Stroyer, Hansen & Klausen, 2004). To regularly monitoring training data, anthropometry, body composition, and/or physical fitness throughout the season is key for the structured development of performance and the prevention of overuse injuries. In fact, these data are essential to help coaches evaluate their training on a daily basis by tailoring ongoing decision-making processes (Bourdon et al., 2017).

For a football team, there are many important factors for success and it is difficult to detach anthropometric and physiological characteristics as crucial factors in sports performance. advanced anthropometric dimensions (stature and weight) and performance characteristics (power, speed, strength, and endurance) often contribute to a maturity-selection bias, which is characterized by the over selection
of early-maturing players retained by academy soccer development programs (Chris Towlson and all,2020).

Nevertheless, evaluation of body composition in soccer players helps to improve their performance and evaluate applied training plan results (Sutton, L.; 2009), which is an important component of the athletes' individualized and periodized training process (Lukaski, H.C ;2017). Anthropometric measures are globally used in training monitorization as an important determinant of performance(César Leão and coll2019)

Identification of the next generation of sports stars is an important aspect of a youth coach's role. When predicting future success at young age, it is important to know whether anthropometrical and physical performances measures are stable in the long-term. This refers to the consistency of the position or rank of individuals in the group relative to others (Dennis M;2018).

Therefore, the development of anthropometrical (and physical and physiological) characteristics, required for an elite soccer match, might not be fully evolved in young soccer players, since they experienced formal training for just a few years with lower game intensity and shorter match duration(DIETER DEPREZ , 2015).

Timing of PHV onset is of relevance to academy soccer practitioners, given that temporary, maturity-related enhancements in anthropometric and physical fitness characteristics have been shown to be significant for injury risk and confound the selection processes employed by soccer academies(Chris (Towlson and all,2020)

In the context of youth soccer, the average statures and weights of young soccer players tended to fluctuate above and below reference

medians for non-athletic youth from childhood to mid-adolescence (Center for Disease Control and Prevention, 2000) cited by Russel p and coll.

Youth soccer players classified as local and elite differed in body size and maturity status(Deprez D; Coelho-e-silva and coll;2015) . Larkin P; and O'Connor D, reported that in talent identification and recruitment process, there is an extensive body of research exploring the skills and qualities that may discriminate skilled and less-skilled performance at a youth level (i.e., 11±17 years), including anthropometric and physiological , perceptual-cognitive, and psychological factors .
As anthropometrical characteristics are related to better performances in speed and explosive leg power,
it could be expected that players with larger body size dimensions are more presented at higher levels
of competition(DEPREZ D, 2015), However, most of the relevant studies have been based on elite or professional soccer players, and there is little research about young, nonelite soccer players (SUSANA M ,2007), in the other side, extensive research has shown that anthropometric characteristics and performance in field tests effectively discriminate soccer players by competitive level (Coelho-e-Silva,2010).

The use of standardized measurements (e.g., anthropometric, fitness, and technical skills) can assist coaches and practitioners in objectively examining soccer players' characteristics for subsequent selection (Aquino, R and coll;2017). Erik Nughes;2020; reported that In general, selected (i.e., professional) young players are taller, heavier, and more biologically mature than their non-selected (i.e., amateur) counterparts.

In this manner , Our main concern is to define some anthropometric characteristics among youth Algerian soccer players, and comparing these characteristics according to playing level (elite-subelite and amateur), therefore, youth soccer coaches could consider these parameters over the talent identification and development process.

Further understanding of determinants of success, such as specific anthropometric, may be important in both talent identification and development processes.

2. *Theoretical component*

2.*1 Hypotheses*

Our research question is about requirements that youth soccer players need in order to play in high level of competition, as far as we know that playing soccer in high level of competition, depend on anthropometric characteristics, specifically the height and weight, Indeed, many experts in the field, such as soccer coaches, managers and scientists believe that the success of this sport can be associated with anthropometric characteristics of players (Mehdi ben brahim and coll,2013).
investing data in youth soccer is capital in order to guaranty success in the future, We consider that anthropometrics characteristics among youth soccer players can be
discriminative between competitive division, and we think that having

expand data for your soccer players and their classification is very helpful for youth coaches to pick out the relevant players, moreover these characteristics are part of talent identification in youth soccer players.

2.*2 Objectives*

General objective:

The purpose of the current study was to investigate the characteristics of youth soccer players ranging from U13 until U19 belonging to Algerian soccer federation .

Specific objectives :

- Define longitudinal anthropometrics (weight -height) data for youth soccer players for different ages (U13-U14 - U15 - U17 - U19)
- Compare these anthropometrics data according to level of play(competitive division) : Elite-Subelite and Amateur

2.*3 tasks:*

- Review of literature related to anthropometrics youth soccer players (articles -Books and others resources)
- Defining the level of play according to Algerian soccer federation.
- Measuring some anthropometrics characteristics (weight and height) for different age groups (U13-U14 - U15 - U17 - U19)

2.***4 Research terminology:***

-**Anthropometry** : refers to the measurement of the human individual. An early tool of physical anthropology, it has been used for identification, for the purposes of understanding human physical variation (wikipedia)

-**Talent** : a group of aptitudes useful for some activities; talents may refer to aptitudes themselves or to possessors of those talents (wikipedia), talent is something you have, something you are, something you can be or something you can develop (cited by Emir Mustafovic and all)

- **Soccer**: a game played between two teams of eleven players , where each team tries to win by kicking a ball into the other team's goal (wikipedia)

2.*5 Similar studies:*

This section summarizes the existing literature related to our study:

-This study of PUI-LAM WONG and coll treats the RELATIONSHIP BETWEEN ANTHROPOMETRIC AND PHYSIOLOGICAL

CHARACTERISTICS IN YOUTH SOCCER PLAYERS, PUI-LAM WONG, KARIM CHAMARI, ALEXANDRE DELLAL,
AND ULRIK WISLØFF Journal of Strength and Conditioning Research_ 2009 National Strength and Conditioning Association

-The study of SUSANA M. GIL talks about PHYSIOLOGICAL AND ANTHROPOMETRIC CHARACTERISTICS OF YOUNG SOCCER PLAYERS ACCORDING TO THEIR PLAYING POSITION: RELEVANCE FOR THE SELECTION PROCESS, SUSANA M. GIL, JAVIER GIL, FA´ TIMA RUIZ, AMAIA IRAZUSTA, AND JON IRAZUSTA, Journal of Strength and Conditioning Research, 2007, 21(2), 438–445 _ 2007 National Strength & Conditioning Association

-This one of Norikazu Hirosea and Taigo Sekib illustrate : TWO-YEAR CHANGES IN ANTHROPOMETRIC AND MOTOR ABILITY VALUES AS TALENT IDENTIFICATION INDEXES IN YOUTH SOCCER PLAYERS, Journal of Science and Medicine in sport 19 (2016)158-162

-This relevant study from Dieter Deprez : A LONGITUDINAL STUDY INVESTIGATING THE STABILITY OF ANTHROPOMETRY AND SOCCER-SPECIFIC ENDURANCE IN PUBERTAL HIGH-LEVEL YOUTH SOCCER PLAYERS, Dieter Deprez , Martin Buchheit , Job Fransen , Johan Pion, Matthieu Lenoir , Renaat M. Philippaerts and Roel Vaeyens; faculty of medicine and health sciences department of movement and sports sciences, university Gent 2015

-This study talks about : IDENTIFYING TALENTED YOUNG SOCCER PLAYERS: CONDITIONAL, ANTHROPOMETRICAL AND PHYSIOLOGICAL CHARACTERISTICS AS PREDICTORS OF PERFORMANCE, Iraia Bidaurrazaga-Letona, José Antonio Lekue, Markos Amado3, Jordan Santos-Concejero &
Susana Maria Gil1 RICYDE. Revista internacional de ciencias del deporte
VOLUMEN XI - AÑO XI Páginas:79-95 ISSN :1 8 8 5 - 3 1 3 7 Nº 39 - Enero - 2015

- IRAIA BIDAURRAZAGA talks about DOES A 1-YEAR AGE GAP MODIFY THE INFLUENCE OF AGE, MATURATION, AND ANTHROPOMETRIC PARAMETERS AS DETERMINANTS OF PERFORMANCE AMONG YOUTH ELITE SOCCER PLAYERS?
Iraia bidaurrazaga-letona, Jose´ a. lekue, Markos amado, and Susana m. gil; Journal of Strength and Conditioning Research _ 2017 National Strength and Conditioning Association, 33(9)/2541–2547

3. Practical aspect:

3.1 Methodology

Our path of research belongs to description methodology , we took players from different teams and level of play (Elite-Subelite-Amateur)ranging from U13 til U19

according to Algerian soccer federation, and we measure their height and weight in order to solve our problematics. all measurements were conduct during April 2019 during competitive season, teams train between 3 to 5 practices a week plus 1 game each week.

3.2 Reasearch touls :

Theorical study:

We reviewed a lots of articles related to our study mixing old ones and newest ones

Antropometrics tests :

We measured weight and height for about 386 youth soccer players ranging from U13 til U 19 belong

to different level of play (Elite -Sub elite and Amateur)

Statistical Analysis:

The results were analyzed using SIGMA STAT software (Version 4.0 : 2008 integrated with SigmaPlot 11).The magnitude of the changes was assessed with 95% confidence intervals (95% CI). We used the average and standard deviation values. In order to compare between groups we used the T test student .

Population:

386 youth soccer players belong to different level of play(competitive division) according to Algerian soccer federation , ranging from U13 til U19 , the distribution of players were : (214 Elite – 95 Subelite -

77 Amateur), following are the teams we work with:

Elite : MC Alger _USM Alger _NA hussein dey_USM Harrach _CR Belouizdad

Subelite: ESBen aknoun _USM Cheraga _CRB Dar beida-

Amateur: AGB Messous_irb bouskoul- crof wled fayet- Associations

Teams participated in a 9-month competitive season (September–May) through the Federation. Players participated in three to five training sessions per week (90 min) and one game per week, usually on friday and Saturday.

Table 1. Number of players of the different ages and competitive groups: Elite (E), Sub-elite (SUB) and Amateurs (A)

Player's number / ages	Elite (E)	Sub elite (Sub)	Amateur (A)
U13	15	18	21
U14	47	20	19
U15	43	21	14
U17	57	18	12
U19	52	18	11

Table 2. Anthropometric characteristics (Weight) of the different ages and competitive groups: Elite (E), Sub-elite (SUB) and Amateurs (A)

	Weight		
Play level / ages	Elite (E)	Sub elite (Sub)	Amateur (A)
U13	41.86±6.23	40.33±7.16	38.9±7.06
U14	46.38±6.35	46.7±10.65	49.76±12.91
U15	56.25±6.99	52.42±10.48	57.92±9.62
U17	63.20±6.21	63.08±6.31	61.16±7.15
U19	68.11±6.79*	68.41±8.07	63.36±5.98

Data are mean ± SD.

$p < 0.05$

*** Significant differences between Elite and Amateur in U19 age group**

No symbol means : no differences found

Table 3. Anthropometric characteristics(Height) of the different ages and competitive groups: Elite (E), Sub-elite (SUB) and Amateurs (A)-

	Height		
Play level / ages	Elite (E)	Sub elite (Sub)	Amateur (A)
U13	1.49±0.06	1.52±0.07	1.47±0.09
U14	1.59±0.08	1.57±0.08	1.58±0.08
U15	1.68±0.08	1.65±0.09	1.70±0.09
U17	1.74±0.05	1.74±0.06	1.71±0.07
U19	1.76±0.05	1.78±0.04	1.76±0.06

Data are mean ± SD.
p < 0.05
No symbol means : no differences found

Source: Hakim Bounekar

RESULTS:

The subjects' ages , their numbers and level of play data are summarized in **Table 1**,

The results of the present study revealed that inherent anthropometrical characteristics (Height) of youth soccer players from different competitive level (Elite-Sub elite-Amateur) show no difference in all ages (U13 -U14 -U15 - U17- U19) **(Table 3)** , same finding **(table 2)** were registered regarding the weight of the ages (U13 -U14 -U15 - U17), The only exception was observed in U19 , therefore Elite are heavier than Amateur (0.014).

Our finding are in line with Vaeyens et al. (2006) and Le Gall et al. (2010) that found no differences in anthropometry between elite, sub-elite and non-elite Flemish soccer players (U13-U16), and between future international, professional and amateur French soccer players (U14-U15), respectively. In other side our finding are in contrary with the research of (Ben Brahim and coll ,2013) which supports but in the short term, the fact that soccer coaches can select young players based on their anthropometry characteristics other than technical and tactical performance. The study of (Owen et al., 2018)states that it is not possible to determine whether young footballer is a potential, based on anthropometric measures of body composition, which doesn't obstruct their performance on the field and playing football on high level.

However, the typical characteristics for the different playing level does not exist according to our finding,

The only exception registered can be explained by the quality and quantity of training between high level and amateur , this is confirmed by , Reilly et al. (2000) have concluded that elite soccer teams are characterized by relative heterogeneity in body size. Malina et al(2004) found that body mass is the most significant predictor of 30-m sprint performance and height is the most significant predictor of vertical jump performance.

This is much some data studies (cross-sectional and longitudinal) that revealed that young soccer players at higher levels of competition demonstrated larger body size dimensions (Figueiredo and coll., 2009a; Coelho-e-Silva and coll., 2010; Rebelo and coll.,2013). As mentioned by PUI-LAM WONG and coll,2009, the long-term effect of selecting players based on their anthropometry advantage leads to a strong bias for those players who mature early (heavier and taller) to be selected into professional, semi professional, and U15 to U18 national teams, and eventually, the proportion of young players who are lighter and shorter decreased with increased age from U11 to U16.

Therefore, as suggested by Reilly et al. (2000), other factors other than absolute anthropometry advantage, such as psychological and soccer-specific skills should be also considered in the selection of young soccer players for developing future high-class players.

4. *CONCLUSION*

This study aimed to analyze some anthropometrics parameters (weight and height) among youth Algerian soccer players ranging from U13 to U19 and to compare the players profiles between different competitive divisions (Elite -Sub elite and Amateur), Generally, this study highlighted that anthropometrics characteristics' (weight and height) across all ages could not distinguish between successful and less successful young soccer players. Considering the differences in weight of elite and amateur U19,this is might reflect the muscular differences between high level training in term of quality and quantity. The results provide insights into the selection process in youth soccer and suggests the no usefulness of these measures in distinguishing competitive level in youth soccer players .

Our advice is that coaches might not consider these characteristics over the talent identification and development process in soccer. Therefore, as part of best

orientation guidelines, we recommend that , coaches and scouts should be aware when selecting players based on anthropometrical characteristics and exclude potentially talented players that are younger, smaller and lighter during the talent identification process, Hence, other factors should be considered in the selection of young soccer players.

Information in this regard maybe helpful to trainers and strength conditioning coaches for enhancing players specific performance and talent selection.

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