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Body Composition of Young Soccer Players

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Body Composition of Young Soccer Players

By Denis Čaušević, Seth Spicer, Ahmed Gawash

Abstract

- Aim: To examine and analyze the body composition of young soccer players across different age groups.
- Results:
 - U-15 players had lower body height, weight, BMI, and fat free mass than U-17 and U-19 players but higher percentage of body fat.
 - Percent of body fat mass decreases with age, while body height, weight, and lean body composition increase non-linearly with age.
- Conclusion: Younger soccer players have lower absolute values of morphological characteristics compared to senior players.

Introduction

- Soccer is a popular sport played by men, women, and children worldwide.
- Studies have been conducted to gather information on young soccer players' abilities and characteristics for better training planning and selection.
- Body composition is an important indicator of physical fitness and general health in soccer players.
- Excess adipose tissue negatively affects performance, while a high percentage of fat-free mass contributes to power production during high-intensity activities.
- Body composition data can also provide information on an athlete's nutritional state and current body fluid homeostasis.
- Changes in body composition, such as an increase in lean mass or a decrease in fat-free mass, can improve a player's performance.
- This study aims to examine and analyze the body composition of young soccer players across different age groups.

Results

- Variables for body composition (U15, U17, and U19) of subjects are shown in Table 1.
- One-way ANOVA between groups shows significant differences in body composition.
- U-15 group had significantly lower body mass ($F = 29.308, p \leq 0.01$), body height ($F = 42.636, p \leq 0.01$), greater BF% ($F = 15.003, p \leq 0.01$), and lower FFM ($F = 39.543, p \leq 0.01$) than older groups.
- The U17 group had a significantly lower mean FFM value than the U19 group (Table 2).

Table 1. Results of descriptive parameters of U15, U17 and U19

	U15	U17	U19	ANOVA	
	(n=53)	(n=51)	(n=22)	F	p
Age [years]	14.68±0.47	16.47±0.50	18.05±0.38	687.822	.000*
BM [kg]	53.61±7.85	61.52±9.80	69.43±6.28	29.308	.000*
Height [cm]	165.14±6.48	174.55±7.38	179.22±6.01	42.636	.000*
BMI [kg · m ⁻²]	19.72±2.35	19.91±2.85	21.65±1.43	5.121	.007*
BF [%]	13.48±5.29	9.77±2.84	8.86±2.98	15.003	.000*
FM [kg]	7.45±3.82	6.22±2.69	6.20±2.21	2.348	.100
FFM [kg]	46.21±5.76	54.32±10.03	63.22±5.70	39.543	.000*

Table 2. Differences among the categories

	Group (I)	Group (J)	Mean Difference (I-J)	Sig.
	BM [kg]	U15	U17	-7.90
U15		U19	-15.81	.000*
U17		U19	-7.91	.001*
Height [cm]	U15	U17	-9.41	.000*
	U15	U19	-14.08	.000*
	U17	U19	-4.67	.024*
BMI [kg · m ⁻²]	U15	U17	-0.19	.693
	U15	U19	-1.92	.002*

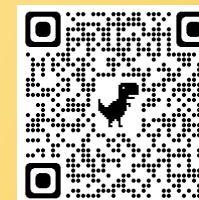
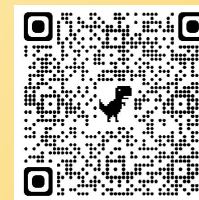
Discussion

- The aim of this study was to examine and analyze the body composition of young soccer players, across different age groups (U15, U17, U19).
- The age of a soccer player affects their body composition (Graph 1.).
- The U-15 group had significantly lower mean body height, weight, body mass index, fat-free mass, and significantly higher percentage of body fat mass and total fat mass than the U-17 and U-19 age groups.
- The U19 group was substantially taller and heavier than the younger groups while exhibiting a lower BF% and greater FFM.
- Young soccer players in all selections have BMI values in a normal range.
- Indicators of FFM play a significantly greater role as a predictor of high performance and especially motor and functional abilities.
- FFM increases from an average of 46.2 kg in the U15 selection, over 54.3 kg in the U17, all the way to 63.2 kg in the U19. These increases of 16.1% between U15 and U17 and 15.1% between U17 and U19 are attributable primarily to increased muscle mass.
- The BF% tends to decrease with age, and in this study, BF% in young soccer players ranged from approximately 8.86±2.98% in the U19 selection to 13.48±5.29% in the U15 category.
- This study has some limitations, such as not monitoring the athlete's dietary intake during the stay-at-home orders and not assessing the player's maturity status.

Conclusion

- The study confirms conclusions of previous studies on morphological characteristics of young soccer players.
- Determining morphological profile is important for selection and prediction of success in soccer.
- Morphology is one of the factors influencing success in soccer, and younger players have lower morphological characteristics than senior players.
- This should be taken into account especially for U15 and younger categories where growth and development is not yet completed.
- Morphological profile is the basis for monitoring growth and development, and follows development curve with minor individual deviations.

References & ResearchGate



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