



Anthropometric And Physical Performance Profiles Of Youth Netball Players

Abstract

Youth netball players' anthropometric and physical performance profiles have not been extensively researched. Studies on young netball players' physical performances are scarce. Therefore, the purpose of this study was to assess youth netball players' height, weight, body mass index (BMI), and physical attributes by position. Ninety-one female netball players between the ages of 17 and 20 took part in the study. Physical fitness performance (speed, agility, power, flexibility, and aerobic endurance) and anthropometric measurements (height, weight, and body mass index) were gathered. Anthropometric results revealed that players' positions differed significantly in height and weight ($p < .05$) but not in body mass index ($p > .05$). In terms of physical fitness, the results indicated that the players' positions in each fitness component did not differ significantly ($p > .05$). These results show that female netball players' body weight and height vary depending on their position. Coaches may be able to enhance athlete performance prior to a competition with the aid of these physical performance profiles.

Keywords: Anthropometric, physical fitness, sports performance

Introduction:

Sports performance excellence has been associated with a number of significant aspects, including psychological and physiological traits. Physiological, psychological, and physical fitness metrics are used to gather information on these demands, and each of these aspects is helpful in any sport. When measuring sports performance, a number of physiological parameters (anthropometrics and physiological performances) must be taken into account because they can affect both individual and team performance. These elements are crucial in guaranteeing that players perform at their best in sports. The majority of models of athletic development emphasize how these elements combine to support athletes' long-term growth and performance. One of the most popular team sports activities played by women in practically every country in the world, netball is a highly skilled sport with quick movement patterns that include running, jumping, throwing, and catching. Players must develop a variety of fitness components, including as muscular power and endurance, in order to meet the physiological demands. According to Woodland (2006), every member of a team interacts with every other member inherently since each member has a specific job and position. Physical fitness abilities like strength, power, speed, and agility are crucial for winning netball matches. To play continuously throughout the game and recover well in between high-intensity attacks, players must also possess a high degree of aerobic fitness.

However, biomechanical, anthropometric, and physical characteristics associated with musculoskeletal injuries were evaluated in the earlier study. According to this study, young netball players who have more biomechanical abnormalities are more likely to sustain injuries. Athletes' anthropometric and

physical performance profiles can give coaches and players crucial information for training advancement and talent discovery. for reasons. Additionally, these profiles could assist coaches in creating an effective training regimen and reduce the likelihood that their athletes will sustain injuries. Thus, the purpose of this study was to identify the characteristics of young Sabah netball players who participated in the 2019 Sabah Games according to their playing positions. We postulated that there is a gap for the particular position in netball based on anthropometric measures and players' physical performances during practice and prior to tournaments.

Methods

Participants

91 female youth netball players (age = 18.88 ± 4.31 years) from eight different Belagavi districts—who participated in the Netball Games (SAGA) were included in this study. Universiti Rani channamma authorized the study. Seven positions—center (C), wing defense (WD), wing attack (WA), goal defense (GD), goal attack (GA), goal shooter (GS), and goal keeper (GK)—were assigned to the participants. Anthropometric Participants in anthropometrics were gathered prior to the physical examination. A portable stadiometer (Seca 217) was used to measure height to the closest 0.01 m. A certified electronic scale was used to measure the weight to the closest 0.1 kg. The body mass index (BMI) was then computed using the formula $BMI = \text{kg}/\text{m}^2$.

Procedures

This cross sectional study is an experimental To reach their peak level of fitness, each competitor trained with their teammates three months before to the competition. One week prior to the start of the competition, all physical testing was done. A 15-minute warm-up, a 60-minute physical performance test, and a 10-minute cool-down comprised the testing methodology. Every participant received a minimum of three to five minutes of respite in between each physical test.prior to the exam a qualified coach provides a each test should be properly demonstrated and explained in detail to participants. Each participant had two attempts to complete each test component after being verified to be injury-free. Agility, speed, power, flexibility, and aerobic endurance. Test were among the physical performance evaluation. Researchers selected these physical elements because international netball players' physical performance profiles indicate that they frequently engage in high-intensity movement patterns (running, sprinting, jumping, and shuffling) and require the highest levels of muscular strength and power production.

Flexibility

The T-test was chosen to evaluate agility. The test is appropriate for all sports and involves running forward, backward, and sideways. The purpose of this exam is to evaluate a person's ability to shift direction when moving forward, backward, and laterally. Four cones were utilized and arranged in a T form, with two cones positioned 4.57 meters on either side of the second cone and the first cone 9.14 meters from the starting point. Participants in this test had to run forward (9.14 meters) and touch the top of the cone with their right hand, side shuffle to the left (4.57 meters) and touch the top of the cone with their left hand, side shuffle to the right (9.14 meters) and touch the top of the cone with their right hand, shuffle back left to the middle cone (4.57 meters), touch with their left hand, and backpedal back to the starting point. Trials were deemed unsuccessful if individuals did not touch every cone or crossed their legs while shuffling on both sides.

Speed

A 20-meter sprint test was chosen to evaluate speed. This test looks at the athlete's speed and acceleration. Based on the athlete's horizontal velocity, a sprint or speed can be thought of as a mixture of three distinct phases: quickness or acceleration, reaching maximum speed, and maintaining maximum

speed [15]. Participants in this test had to run as quickly as they could from a starting position until they reached the 20-meter mark.

Strength

A standing long jump test was chosen to evaluate participants' lower limb power. This test seeks to determine a person's lower limb strength and explosive power [16]. Participants were instructed to stand motionless behind a line with both feet parallel, attempt to gain momentum by bending their knees, then jump as far as they could by swinging their arms forward. The distance is measured from the starting line to the location where the foot's back ends touch down.

Flexibility

The participants' flexibility was evaluated using a standard sit-and-reach test. The participants sit on the floor with their knees outstretched, their legs together, and the soles of their feet pressed up against the box. Participants then extended their arms forward while placing one hand on top of the other. Without bending their knees, participants reached forward by moving their hands as far along the measuring scale as they could. The individual will be assisted by one tester to make sure their knees are fully stretched.

Endurance

The 20-meter multistage fitness test was used to measure aerobic endurance. The estimated maximal oxygen consumption (VO₂ max) during the strenuous exercise is the goal of the 20-meter multistage fitness test. It has been demonstrated that this physical test is one of the aerobic powers with accurate and valid indicators. Running back and forth between two cones spaced 20 meters apart is required of participants. Participants' running speeds will be determined by the audio signals released by the recording. The goal was for participants to finish as many stages as they could. When a participant failed to maintain their running speed or failed to reach a 3-meter zone between each line at the time of the audio signal in two consecutive scenarios, the test was over.

Statistical Analysis of Data

Data are presented as descriptive statistics (mean and standard deviation). To ascertain the difference between the locations in each variable, including the anthropometric traits, a one-way analysis of variance (ANOVA) was employed. Version 26.0 of the Statistical Package for Social Science (SPSS) program was used to examine the descriptive and inferential statistics.

Results

The anthropometric characteristics and physical fitness performances between positions of the players are presented in Table 1 and 2.

Table1: Anthropometrics of players (mean±SD).

Position	Number of players(n)	Height (m)	Weight(kg)	BodyMassIndex(BMI)
Centre(C)	12	1.57±.02	49.84±6.6	20.31±2.5
Wing defense(WD)	13	1.59±.04	50.65±4.4	20.05±1.4
Wing attack(WA)	18	1.57±.06	55.80±7.3	22.33±4.0
Goal defense (GD)	9	1.66±.05	55.84±8.3	20.31±3.2
Goal attack(GA)	11	1.63±.05	53.45±6.7	20.21±2.1
Goal shooter(GS)	13	1.67±.08	61.16±8.7	22.01±2.9
Goal keeper(GK)	15	1.64±.05	58.12±7.2	21.66±2.5
<i>p</i> - value	-	.000	.019	.153

Table2:Physical fitness performances of players (mean±SD).

Position	Speed(sec)	Agility(sec)	SLJ(m)	Flexibility(cm)	EstimatedVO ₂ max
Centre(C)	4.02±.41	13.43±2.17	1.80±.22	34.23±6.44	29.73±6.89
Wingdefense(WD)	3.93±.43	12.89±2.02	1.71±.20	34.94±7.33	33.41±6.77
Wingattack(WA)	4.11±.46	13.34±0.91	1.72±.17	30.82±4.91	29.17±5.35
Goaldefense (GD)	4.01±.77	13.21±1.11	1.80±.22	32.91±9.66	32.99±6.77
Goalattack(GA)	3.90±.45	12.82±1.23	1.80±.26	35.76±6.80	31.18±7.79
Goalshooter (GS)	4.33±.49	13.86±1.74	1.78±.25	34.08±5.19	27.27±4.38
Goalkeeper(GK)	4.13±.49	13.31±1.06	1.76±.22	32.13±6.86	29.46±5.83
<i>p</i> - value	.592	.653	.846	.446	.172

Discussion and Conclusion

The purpose of this study was to investigate the physical characteristics and anthropometrics of young netball players from Sabah during the 2019 Sabah Game (SAGA). By examining each player's position throughout competition, the anthropometrics and physical performances have been noted. We postulated that each job had distinct anthropometric traits and varying degrees of physical performance level. According to Table 1, the player in the goal shooter (GS) position has the maximum height, while the players in the wing attack (WA) and center (C) positions have the lowest height. A goal shooter (GS) weighs more than other players, according to weight criteria. In addition, the center player weighs less than the other players. The player in the GS position was the tallest and heaviest competitor, according to the anthropometric results. A player in position C, on the other hand, was smaller and shorter than those in other positions.

There were significant differences across places ($p < .05$), according to the results of the one-way ANOVA in height and weight (Table 1). The body mass index did not significantly differ between positions ($p > .05$). These results demonstrated that while choosing members for the squad, each team considers these two anthropometric characteristics: height and weight. whereby researchers found that a player's height, weight, and fat percentage all contribute to their quality as a netball player. Proportion of a player. Additionally, the results demonstrated that players in the GS position need to be taller. Players in the GS position may be able to attack and score while assaulting the other team thank to their superior body weight. In contrast, the team benefits from the anthropometric traits of center players who are very likely to have small bodies. An agile center is necessary for a fast-paced, high-intensity netball match, whether the team is playing offensively or defensively.

The results of a study which discovered that a center player has the lowest height in comparison to offensive and defense player further corroborate this conclusion. The findings in Table 2 demonstrated that there was no discernible variation in the players' physical performance between positions. ($p > .05$). In contrast to players in other positions, the descriptive data indicated that a player in the GA position had the fastest test results in speed testing. dominated the test results when compared to players at other positions who recorded the fastest time in the T-test. The SLJ results demonstrate that players in the center do better in terms of leg strength than players in other positions. According to the flexibility result, players in the GA position performed better when they achieved the longest reach in the sit-and-reach test. Players in the WD position outperform those in other positions in the 20-meter multistage fitness test for maximum oxygen consumption.

In conclusion, this study can serve as a standard for netball research and can be utilized to determine a player's physical fitness profile based on their position within the game. These results imply that a comprehensive collection of player profiles with anthropometric traits (height, weight, and body mass index) and elements of physical fitness performance could be employed for netball teams' ongoing selection process. This profile can be used as a guide for researchers and coaches to deal with different competition stages. To enhance players' physical performance and reduce the chance of injury during practice and competition, coaches can create their training regimens based on the athletes' physical fitness profiles.

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