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Assessment of Physical Morphology Motor Fitness and Soccer Skill Proficiency in Gorkha National Players

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Abstract

Introduction: Soccer performance depends on a combination of physical attributes, motor fitness, and technical skills. Anthropometric characteristics and somatotype influence a player's agility, endurance, and overall field performance. Understanding players' physical and motor profiles can help coaches design targeted training programs, enhance performance, and identify potential talent. Although more Gorkha athletes are becoming interested in soccer, there hasn't been much research on their body measurements, fitness levels, or playing skills. The primary objective of the study was to assess the morphological characteristics, motor fitness, and soccer skills of Gorkha national soccer players. **Method:** The study included 100 male national-level Gorkha soccer players aged 18–30 years. Anthropometric data, including height, weight, skinfold thickness, girths, and skeletal breadths, were collected according to ISAK Level-1 protocols, and somatotypes were calculated using the Heath-Carter method. Motor fitness was evaluated using standardized tests for speed (50 m dash), agility (shuttle run), explosive leg strength (vertical jump), cardiovascular endurance (1000 m run/walk), and strength endurance (sit-ups). Soccer skills specifically dribbling, passing, and shooting—were assessed using the Mor-Christian General Soccer Ability Test Battery. **Results:** The participants had a mean height of 166.16 ± 4.36 cm and a mean weight of 59.52 ± 5.98 kg. The predominant somatotype was Ectomorphic Mesomorph, accounting for 57% of the players, with mean components of Endomorphy (2.02), Mesomorphy (4.18), and Ectomorphy (2.79). In terms of motor fitness, cardiovascular endurance exhibited the highest variability among participants (Mean: 31.41 ± 10.77), while strength endurance was the most consistent. Regarding soccer skills, dribbling and passing performances were relatively uniform, whereas shooting ability showed significant individual variability (Mean: 20.72 ± 10.83). **Conclusion:** The study establishes essential reference values for the anthropometry, motor fitness, and soccer skills of national-level Gorkha players. The findings suggest that while these players possess specific morphological traits suitable for the sport, coaches should design targeted training programs to improve areas with high variability, particularly cardiovascular endurance and shooting ability.

Keywords: Gorkha Soccer Players, Anthropometric Characteristics, Motor Fitness, Playing Ability, Somatotype, Physical Profile, Skill Assessment.

Resumen

Introducción: El rendimiento en el fútbol depende de una combinación de atributos físicos, aptitud motora y habilidades técnicas. Las características antropométricas y el somatotipo influyen en la agilidad, la resistencia y el rendimiento general de un jugador en el campo. Comprender los perfiles físicos y motores de los jugadores puede ayudar a los entrenadores a diseñar programas de entrenamiento específicos, mejorar el rendimiento e identificar talentos potenciales. Aunque cada vez más atletas Gorkha muestran interés en el fútbol, no se han realizado muchas investigaciones sobre sus medidas corporales, niveles de aptitud física o habilidades de juego. El objetivo principal del estudio fue evaluar las características morfológicas, la aptitud motora y las habilidades futbolísticas de los jugadores de la selección nacional de fútbol Gorkha. **Métodos:** El estudio incluyó a 100 jugadores de fútbol Gorkha de nivel nacional, de sexo masculino y con edades comprendidas entre los 18 y los 30 años. Se recopilaron datos antropométricos —incluyendo estatura, peso, espesor de pliegues cutáneos, perímetros y diámetros óseos— de acuerdo con los protocolos ISAK de Nivel 1, y se calcularon los somatotipos utilizando el método de Heath-Carter. La aptitud motora se evaluó mediante pruebas estandarizadas de velocidad (carrera de 50 m), agilidad (carrera de lanzadera o *shuttle run*), fuerza explosiva de las piernas (salto vertical), resistencia

cardiovascular (carrera/caminata de 1000 m) y resistencia muscular (abdominales). Las habilidades futbolísticas —específicamente el regate, el pase y el tiro— se evaluaron utilizando la Batería de Pruebas de Habilidad Futbolística General Mor-Christian. **Resultados:** Los participantes presentaron una estatura media de 166,16 ± 4,36 cm y un peso medio de 59,52 ± 5,98 kg. El somatotipo predominante fue el mesomorfo ectomórfico, representando el 57% de los jugadores, con componentes medios de endomorfia (2,02), mesomorfia (4,18) y ectomorfia (2,79). En términos de aptitud motora, la resistencia cardiovascular mostró la mayor variabilidad entre los participantes (Media: 31,41 ± 10,77), mientras que la resistencia muscular fue la más consistente. En cuanto a las habilidades futbolísticas, el desempeño en el regate y el pase resultó relativamente uniforme, mientras que la capacidad de remate mostró una variabilidad individual significativa (Media: 20,72 ± 10,83). **Conclusión:** El estudio establece valores de referencia esenciales para la antropometría, la aptitud motora y las habilidades futbolísticas de los jugadores Gorkha de nivel nacional. Los hallazgos sugieren que, si bien estos jugadores poseen rasgos morfológicos específicos idóneos para este deporte, los entrenadores deberían diseñar programas de entrenamiento focalizados para mejorar aquellas áreas que presentan una alta variabilidad, particularmente la resistencia cardiovascular y la capacidad de remate.

Palabras Clave: Jugadores de fútbol Gorkha, Características antropométricas, Aptitud motora, Capacidad de juego, Somatotipo, Perfil físico, Evaluación de habilidades.

Introduction

Soccer is the world's most widely played and followed sport. It is a semi-structured team sport characterized by complex kinesiological activities and fast, dynamic movements (Mijalković et al., 2023). Physiologically, soccer is an intermittent activity consisting of alternating high- and low-intensity efforts with incomplete recovery phases (Cardenas-Fernandez et al., 2017; Ishida et al., 2021). Matches demand repeated high-intensity, short-duration actions interspersed with jogging, walking, and physical contact (Sharma, 2015). Players cover 8–12 km per match, with sprints comprising around 11% of the total distance. Actions include running, sprinting, turning, kicking, heading, and throwing (Singh & Singh Kang, 2013; Singh, 2018). To meet these demands, players must rely on both aerobic and anaerobic energy systems (Čaušević et al., 2023; Kumar, 2017; Singh, 2018). While aerobic fitness can account for as much as 90% of overall energy use, yet high-intensity sprints are often the deciding factor in matches (Amrinder et al., 2013). Thus, success in soccer depends on a combination of technical, tactical, and physical skills (Sharma, 2015). Physical characteristics like aerobic fitness, agility, muscular strength, speed, and explosive power have been recognized as vital for performance (GAURAV et al., 2015). In addition, physical and body composition parameters generally identify high-level from lower-level athletes (Cardenas-Fernandez et al., 2017). Technical preparation—such as proficiency in dribbling, passing, and shooting—remains crucial to increasing motor capacity and ensuring good soccer performance (Kokstejn & Musalek, 2019; Singh, 2018).

The examination of an athlete's physical profile frequently begins with morphological characteristics, which include body mass (BM), height, body mass index (BMI), fat percentage (BF%), muscle percentage, and skeletal muscle mass (SMM) (Mijalković et al., 2023). Somatotype, which reflects body form and composition, is another key determinant of athletic suitability (Perroni et al., 2015; Sharma, 2015). It is classified into: Endomorphy – relative fatness, Mesomorphy – muscularity and skeletal robustness, Ectomorphy – linearity and slenderness. Excess body fat negatively affects motor ability, whereas increased fat-free mass (muscle mass) promotes performance (Mijalković et al., 2023). Motor fitness, defined as the ability to perform at one's physical best, is crucial in soccer (Ryagi & Bhairaddy, 2017; Singh, 2018).

Its major components include: Speed, Agility, Explosive leg strength/power, Cardiovascular endurance (aerobic fitness), Strength endurance. Soccer skills are under Game-Specific Motor Skills (GSMS) and are important for high-level play. Dribbling: keeping ball possession while moving to provide passing or shooting possibilities. Passing: crucial to team play, requiring dexterity with both feet, shooting (kicking): the major offensive talent, with accuracy based on ball contact mechanics. Technical proficiency allows players to maximize their motor capacity and is frequently what separates elite from non-elite players (Kokstejn & Musalek, 2019; Amrinder et al., 2013). Skills are objectively tested utilizing assessments of accuracy and speed in dribbling, passing, and shooting, combined with coach ratings of overall playing ability (Singh & Singh Kang, 2013).

The study focuses on Gorkha male soccer players picked from West Bengal and Sikkim, India. These athletes represent national-level players who compete in major championships (Sharma, 2015). Previous studies on this community have demonstrated that Gorkha players often have an ectomorphic-mesomorph somatotype, associated with effective soccer playing. Establishing normative data for this group can support training tactics, talent discovery, and player development. Despite the global significance of soccer, insufficient study exists on the

physiological and morphological features of elite Indian football players (Sharma, 2015; Singh, 2018). A shortage of published data from South Asia, particularly India, highlights the need for such studies (Amrinder et al., 2013). Comprehensive profiling of Gorkha players will fill this gap and provide essential reference values for anthropometry, motor fitness, and skill.

Study Objective

To assess the morphological characteristics, motor fitness, and soccer skills of Gorkha national soccer players.

Material and Methods

Participants

The study included 100 male national-level Gorkha soccer players aged 18-30 years. All the participants are provided informed consent prior to testing.

Administration and Collection of Data

Anthropometric Measurements

Anthropometric data were collected between 7:00 - 9:00 AM following ISAK Level-1 protocols. Measurements included height, weight, skinfold thickness (biceps, triceps, subscapular, supraspinale, medial calf), girths (upper arm flexed, calf), and skeletal breadths (humerus and femur). Somatotype was calculated using the **Heath and Carter (1990)** (Carter, 2002) method.

Body density was assessed using the (Durnin & Womersley, 1974) equations, and body fat percentage was calculated using (SIRI, 1956) equation.

Equation for Endomorphy: $0.1451(X) - 0.00068(X^2) + 0.0000014(X^3) – 0.7182$

Where 'X' = (Sum of triceps, subscapular, and supraspinale skinfolds) multiplied by (170.18/ height in cm).

Equation for Mesomorphy: (0.858 × H.B) + (0.601 × F.B) + (0.188 × C.A.G) + (0.161 × C.C.G) – (Height × 0.131) + 4.5

Where H.B. Humerus Breadth, F.B. Femur Breadth, C.A.C. Corrected Arm Girth (Flexed Arm Girth – Triceps Skinfold/10), C.C.C. Corrected Calf Girth (Maximal Calf Girth – Calf Skinfold/10).

Equation for Ectomorphy:

If HWR ≥ 40.75, then Ectomorphy = 0.732 × HWR – 28.58

If HWR < 40.75 and > 38.25, then Ectomorphy = 0.463 × HWR – 17.63

If HWR ≤ 38.25, then Ectomorphy = 0.1 or (recorded as ½)

Body density was calculated by the equations of (Durnin & Womersley, 1974). Then, body fat was determined using the Siri equation (1956) for each of the previously calculated densities.

Motor Fitness Variables

Motor fitness was evaluated using standardized test batteries:

Speed: 50 m dash (seconds)

Agility: Shuttle run (seconds)

Explosive leg strength: Vertical jump (cm)

Cardiovascular endurance: 1000 m run/walk (minutes)

Strength endurance: Sit-ups (repetitions)

Soccer Skill Test

The Mor-Christian General Soccer Ability Test Battery was used to evaluate: Dribble, Passing, and Shooting.

Analytical Procedure

For data analysis, a standard statistical procedure was used. Mean was calculated as a measure of central tendency by using the formula-

$$\overline{x} = \frac{\sum x}{n}$$

The standard deviation (SD) was calculated as the measure of variability by using the formula-

$$\sigma = \sqrt{\frac{1}{n}\sum(x - \overline{x})^2}$$

The range was calculated as the simplest measure of variability or dispersion by using the formula-

Range (R) = Max Value – Min Value

Results

Table 1 presents the Anthropometric measurements of 100 national-level male Gorkha soccer players, including descriptive statistics and distributional characteristics. The sample showed modest variance, with an average height of 166.16 ± 4.36 cm and a mean body weight of 59.52 ± 5.98 kg. The triceps skinfold recorded a significantly larger variability with a mean of 7.16 ± 7.17 mm, while the biceps skinfold averaged 3.46 ± 0.89 mm. The subscapular and supraspinale skinfolds showed moderate dispersion, measuring 8.60 ± 2.92 mm and 5.65 ± 2.44 mm, respectively. At 4.92 ± 1.54 mm, the medial calf skinfold remained comparatively constant. Measurements of girth showed a discernible but regulated variance in muscle growth, with the calf girth measuring 34.04 ± 2.31 cm and the upper arm flexed girth measuring 28.22 ± 3.17 cm. Skeletal structural breadth measurements showed little variation, with the femur breadth measuring 8.99 ± 0.35 cm and the humerus breadth measuring 6.47 ± 0.36 cm. Overall, measurements of girth and skeletal breadth were more consistent than skinfold thickness, especially for the triceps skinfold, which showed the greatest variation across individuals.

Table 1. Descriptive data for Anthropometric Variables of Male Gorkha Soccer Players.

	N	Mean		Std. Deviation	Skewness		Kurtosis	
Variables	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Height	100	166.1557	0.42312	4.35632	0.874	0.235	1.531	0.465
Weight	100	59.5160	0.58067	5.97835	0.855	0.235	0.985	0.465
Biceps SF	100	3.4566	0.08675	0.89315	1.933	0.235	4.855	0.465
Triceps SF	100	7.1604	0.69650	7.17094	8.786	0.235	85.103	0.465
Subscapular SF	100	8.6038	0.28370	2.92086	1.110	0.235	0.844	0.465
Supraspinale SF	100	5.6547	0.23680	2.43800	1.814	0.235	5.420	0.465
Medial Calf SF	100	4.9236	0.14959	1.54016	1.095	0.235	1.274	0.465
Upper Arm Flex	100	28.2170	0.30810	3.17212	1.247	0.235	2.430	0.465

Calif	100	34.0434	0.22463	2.31266	0.397	0.235	1.286	0.465
Humerus	100	6.4660	0.03485	0.35880	0.055	0.235	-0.178	0.465
Femur	100	8.9943	0.03428	0.35290	-0.066	0.235	0.131	0.465

Table 2. Somatotype and Descriptive Data for Male Gorkha Soccer Players

Playing Level	Players N=100	Body Types			Mean±SD		
		Endomorphy	Mesomorphy	Ectomorphy			
National Level N=100	1	4.8	4.4	2.2	Endomorphy 2.02 ± 0.920158089	Mesomorphy 4.18 ± 1.115818312	Ectomorphy 2.79 ± 0.809336304
	2	7.9	3	2.1			
	3	2.5	2.5	3.4			
	4	2.1	5.1	2.1			
	5	1.5	4.5	2.7			
	6	1.7	3.5	2.7			
	7	2.3	3.9	2.4			
	8	2	4.8	2.7			
	9	2.1	4.6	3.1			
	10	2.4	3.1	2.8			
	11	2.3	3.9	2.6			
	12	1.7	4.6	2.5			
	13	3.1	4.5	4.1			
	14	2.4	5.1	3.2			
	15	1.8	4.9	1.9			
	16	1.2	3.5	2.5			
	17	1.6	3.2	2.7			
	18	1.5	4	2.2			
	19	2.6	4	2.8			
	20	2.6	4.2	3.6			
	21	3.1	3.7	3.5			
	22	2.1	4.4	2.7			
	23	2.1	4.7	3.5			
	24	1.1	3	2.7			
	25	1.3	5	2.7			
	26	1.4	4.4	2.4			
	27	2.3	4.5	3			
	28	1.3	3.4	3			
	29	1.3	3.7	3.4			
	30	1.3	4.8	2.4			
	31	1.7	5.7	2.6			
	32	1.3	7.1	2.9			

	33	1.6	6.1	2.6			
	34	1.6	5.8	2.3			
	35	1.8	6.1	2			
	36	3.1	4.8	3.5			
	37	1.3	3.9	2.9			
	38	2	5.6	3.6			
	39	1.7	3.1	3			
	40	2.2	3.8	3.5			
	41	1.3	3.6	3.1			
	42	1.8	3.9	3.1			
	43	2.3	4.4	2.6			
	44	2.2	4.6	2.3			
	45	2.4	3.7	2.6			
	46	2.3	3.3	2.9			
	47	1.5	5.2	1.7			
	48	1.3	2.9	2.7			
	49	1.8	4	3.5			
	50	1	3.5	2.7			
	51	1.3	5.1	2.2			
	52	1.6	4.7	2.5			
	53	1.3	5.9	3.1			
	54	1.3	3.4	2.9			
	55	1.7	3.8	3.4			
	56	1.2	4.4	3.7			
	57	1.1	3.8	2.4			
	58	1.6	5.1	2.3			
	59	1.5	4.3	2.3			
	60	1.2	5.8	1.9			
	61	1.3	5.6	2.4			
	62	3.2	4	2			
	63	2.9	4.4	2.1			
	64	2.5	4.7	2			
	65	3.2	4.7	1.9			
	66	2.7	5.4	2			
	67	1.7	5.2	1.6			
	68	2.5	4.9	2.2			
	69	2.3	5	1.4			
	70	3.3	5.5	2.8			
	71	3.3	6.5	2.1			
	72	3	6.8	0.7			
	73	1.8	5.7	1.6			

	74	2.6	5.1	2.1			
	75	3.3	6	1			
	76	3.9	4.8	1.7			
	77	1.9	4.8	1.1			
	78	1.7	3.4	1.4			
	79	1.6	5.1	1.3			
	80	2.2	2.7	3.4			
	81	2	2.2	3.2			
	82	2.3	3	3.6			
	83	2.9	3.6	3.7			
	84	1.3	3.6	3.9			
	85	2	3.4	3.5			
	86	1.1	3.1	3.8			
	87	1.5	3.4	3.5			
	88	1.5	2	3.7			
	89	2.9	3	4			
	90	1.9	2.6	4			
	91	1.5	2.7	4.3			
	92	2.1	2.7	3			
	93	1.9	2.8	3.4			
	94	1.4	2.8	4.2			
	95	1.3	1.8	5.3			
	96	1.5	2.5	3.9			
	97	1.3	3	3.9			
	98	1.2	2.5	3.3			
	99	1.2	3.6	3.8			
	100	1.3	3.1	3.3			

The physique types of Gorkha soccer players are shown in Table 2. Additionally included are the somatotype categories' mean values and standard deviations. Endomorphy, mesomorphy, and ectomorphy were the somatotypes found using the International Society for the Advancement of Kinanthropometry (ISAK) measurement technique.

Table 3. Body Fat % of Male Gorkha soccer players

Players N=100	Body Fat %		
	Amount of Fat (FFM) Kg	Mean ±SD	Range
1	7.59525	7.2244665 ± 0.626372548	9.3357 - 5.7933
2	8.21025		
3	6.62355		
4	7.3923		
5	6.80805		
6	7.16475		

7	6.66045		
8	7.27545		
9	7.257		
10	7.1955		
11	7.4907		
12	6.9495		
13	6.3714		
14	6.66045		
15	7.0356		
16	7.47225		
17	7.5645		
18	7.2324		
19	7.04175		
20	6.31605		
21	6.72195		
22	7.6629		
23	6.91875		
24	7.0725		
25	6.9372		
26	6.86955		
27	7.55835		
28	6.3345		
29	7.02945		
30	7.14015		
31	6.48825		
32	6.73425		
33	7.26315		
34	7.626		
35	7.58295		
36	7.11555		
37	7.3677		
38	6.90645		
39	7.79205		
40	5.9655		
41	6.16845		
42	8.7576		
43	6.8265		
44	7.44765		
45	7.06635		
46	7.9827		
47	7.2939		

48	7.82895		
49	7.3431		
50	7.1955		
51	7.23855		
52	6.61125		
53	6.6789		
54	6.45135		
55	7.36155		
56	7.39845		
57	7.26315		
58	7.10325		
59	7.7613		
60	7.96425		
61	6.82035		
62	7.93965		
63	7.5153		
64	6.89415		
65	7.1709		
66	7.22625		
67	7.30005		
68	6.90645		
69	8.56695		
70	6.5805		
71	7.11555		
72	8.7453		
73	7.2816		
74	7.8474		
75	8.28405		
76	8.16105		
77	8.1795		
78	8.28405		
79	8.45625		
80	6.8265		
81	6.7404		
82	6.43905		
83	7.749		
84	7.80435		
85	7.21395		
86	7.17705		
87	7.0725		
88	7.49685		

89	7.5276		
90	6.62355		
91	6.45135		
92	9.3357		
93	7.10325		
94	6.77115		
95	6.02085		
96	6.9741		
97	5.7933		
98	7.1709		
99	6.56205		
100	7.1709		

The proportion of body fat was calculated using a number of well-known formulas. Descriptive statistics for each equation were obtained for all participants. Significant differences were observed in body fat values obtained from 11 anthropometric measurements using the Heath and Carter (1990) method. Body fat percentage was estimated using the equations of Durnin and Womersley (1974), while body density and body fat percentage were derived using Siri's (1956) formula. These computations were used to calculate and further examine each player's mean body fat percentage, which is shown in Table 3.

Table 4. Profile Percentage in each major somatotype category for National-Level Gorkha Soccer Players

Playing Level	Somatotype Categories	Players n=100
National Level	Mesomorphic Endomorph	2
	Endomorphic Mesomorph	18
	Mesomorphic Ectomorph	-
	Ectomorphic Mesomorph	57
	Ectomorphic Endomorph	-
	Endomorphic Ectomorph	-
	Balanced Endomorph	-
	Balanced Mesomorph	1
	Balanced Ectomorph	1
	Mesomorphic Ectomorph	21
	Endomorphic Mesomorph	-
	Endomorphic Ectomorph	-
	Central	-

Table 4 illustrates the percentage distribution of Gorkha soccer players across somatotype components, coupled with their somatotype classification by playing position. Mesomorphy was the most prevalent trait among the participants, since most of them were categorized as either ectomorphs or mesomorphs. Overall, six distinct somatotype categories were identified. As shown in Table 4, ectomorphic mesomorph, mesomorphic ectomorph, and endomorphic mesomorph were the most prevalent somatotypes. In contrast, mesomorphic endomorphs, balanced ectomorphs, and balanced mesomorphs were less commonly represented.

To facilitate interpretation of the somatotype data, a somatochart was constructed for each player (Figure 1). Most players were located within the ectomorphic–mesomorph quadrant, although some showed greater dispersion across other areas of the chart.

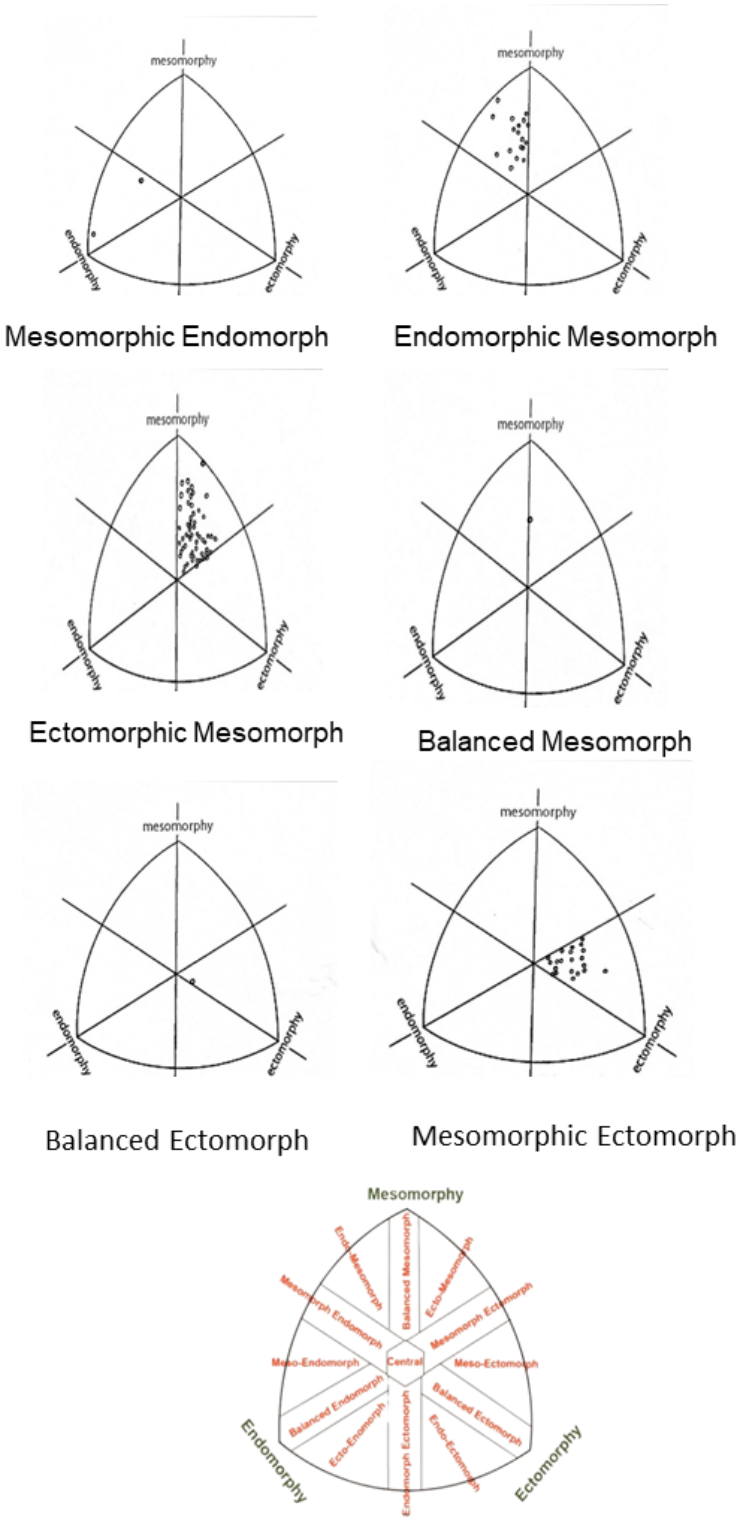

Figure 1. Distribution of somatotype categories among Gorkha soccer players

The Mean and Standard Deviation of each selected variable are shown in Table 5. Male Gorkha soccer players exhibit distinct motor fitness profiles across five key areas: Speed, Agility, Explosive Leg Strength, Cardiovascular Endurance, and Strength Endurance. With an average speed of 61.77 ± 6.91, individual variability was moderate. Explosive leg strength averaged 42.09 ± 6.71 and agility performance averaged 42.57 ± 7.54, both of which showed significant variation across subjects. The most variable of the evaluated characteristics, cardiovascular endurance had a mean score of 31.41 ± 10.77, indicating significant individual variations in aerobic

ability. With a mean of 37.16 ± 5.47, strength endurance showed more consistency than the other measures. Overall, cardiovascular endurance emerged as the most variable metric, whereas strength endurance was rather constant throughout the group.

Table 5. Descriptive basic data for Motor Fitness Level of Male Gorkha Soccer Players

	n	Mean		Std. Deviation	Skewness		Kurtosis	
Variables	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Speed	100	61.7736	0.67082	6.90656	-0.513	0.235	0.734	0.465
Agility	100	42.5660	0.73276	7.54418	0.642	0.235	0.052	0.465
Explosive Leg Strength	100	42.0943	0.65129	6.70540	1.589	0.235	3.481	0.465
Cardiovascular Endurance	100	31.4057	1.04652	10.77455	0.331	0.235	-1.220	0.465
Strength Endurance	100	37.1604	0.53083	5.46528	-0.275	0.235	-0.214	0.465

Table 6. Descriptive data on male Gorkha soccer players' playing ability

	N	Mean		Std. Deviation	Skewness		Kurtosis	
Variables	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Dribble	100	33.5692	0.23039	2.37204	0.360	0.235	-0.304	0.465
Passing	100	5.5283	0.17895	1.84240	-0.078	0.235	-1.033	0.465
Shooting	100	20.7170	1.05148	10.82568	-0.181	0.235	-0.880	0.465

According to the Mor Christian General Soccer Ability Skill Test Battery, there are notable differences in dribbling, passing, and shooting among male Gorkha soccer players, as revealed by this descriptive analysis (Table 6). The dribbling performance averaged 33.57 ± 2.37, demonstrating reasonably consistent results across individuals. With a mean score of 5.53 ± 1.84, passing ability likewise showed little variance between the group. However, shooting performance showed more variation, with a mean of 20.72 ± 10.83, indicating significant variations in participants' accuracy and efficiency. Collectively, dribbling and passing appeared more homogeneous, whereas shooting showed the greatest individual variation.

Discussion

The present study provides a comprehensive analysis of anthropometric characteristics, somatotype distribution, motor fitness, and soccer-specific abilities of national-level Gorkha soccer players are all thoroughly examined in this study. These results support the idea that morphological, physical, and motor characteristics interact to affect soccer performance and provide useful normative data for an understudied population.

The predominance of the ectomorphic–mesomorphic somatotype in our group indicates a body type that is well adapted to the biomechanical and physiological demands of contemporary soccer. Players can benefit from mesomorphic muscularity for movements based on strength and power while maintaining ectomorphic linearity, which promotes agility, speed, and endurance, thanks to this somatotype mix. Gorkha soccer players and other competitive football communities have been found to have similar somatotype profiles, indicating that this body type is beneficial for prolonged high-intensity intermittent activity (Adhikari et al., 2024). While ectomorphy promotes movement economy and repeated running capacity in soccer players, mesomorphy favorably influences physical confrontations and explosive movements, according to earlier research (Singh, 2018b).

The players' physical profiles' aptitude for competitive soccer is further supported by the anthropometric results of a comparatively low body fat percentage and appropriate muscular mass. Studies have repeatedly demonstrated that while greater lean body mass improves motor efficiency, excess adiposity has a deleterious impact on speed, agility, and explosive force (Ilic et al., 2023). The current findings are consistent with previous research on football players showing that appropriate body composition is essential for optimizing performance, especially in activities demanding quick acceleration, deceleration, and direction (Lilić et al., 2022). These results highlight how crucial it is to keep an eye on body composition as part of long-term sports development initiatives.

Significant variation was found in motor fitness analysis, particularly in cardiovascular endurance and agility. Aerobic endurance is essential for sustaining performance intensity and promoting recovery in between repeated high-intensity exertion because soccer is an intermittent sport. Football players competing at various levels have been found to have similar disparities in motor fitness, indicating that variations in training exposure, positional demands, and conditioning status may affect endurance capacity (Sharma, 2015). This variation emphasizes the necessity of customized conditioning techniques as opposed to standard training regimens.

Body composition characteristics seem to have a significant impact on agility performance, which is crucial in match conditions involving quick direction changes. Significant correlations between body fat %, muscular mass, and agility performance have been shown in earlier research, with thinner athletes demonstrating faster change-of-direction (Lilić et al., 2022). Similar results were found in young football players, who performed better in sprinting, jumping, and agility when their muscle % was higher and their fat mass was lower (Ilic et al., 2023). These findings highlight the functional relationship between morphological traits and soccer-specific motor skills, rather than only being descriptive.

Players' dribbling and passing skills were comparatively stable, according to skill performance study, although shooting performance varied more. Disparities in positional specialization and training concentration could account for this tendency. While shooting proficiency frequently requires customized, position-specific preparation, passing and dribbling are typically developed through repetitive team-based drills. Similar disparities in strength and agility across playing roles, especially between attackers, midfielders, and defenders, have been found in studies looking at positional differences in football players (GAURAV et al., 2015). These results imply that in order to improve team performance overall, technical training programs must to be customized to positional demands.

The current study's findings about the correlation between anthropometric traits and motor performance are in line with those from other team sports. Anthropometric factors such limb length, girths, and body mass have been shown to have a strong correlation with agility, leg power, balance, and response time in hockey players (Vileep, 2017). The idea that morphological characteristics are a key factor in determining motor performance in dynamic, high-intensity team sports is further supported by this cross-sport data.

Overall, the results show that the anthropometric, somatotype, and motor fitness traits of Gorkha soccer players at the national level are similar to those observed in populations of competitive football players. Nonetheless, the observed inter-individual variation in shooting and endurance performance highlights the significance of position-specific technical training and focused aerobic conditioning. Within the Gorkha soccer community, creating such performance profiles has useful ramifications for long-term player development, training optimization, and talent identification.

Conclusion

According to the study, the majority of the players had an ectomorphic-mesomorph body type, with mesomorphic and ectomorphic features being their main aspects. Endomorphy (2.02 ± 0.92), Mesomorphy (4.18 ± 1.11), and Ectomorphy (2.79 ± 0.81) were the mean somatotype components, and the Ectomorphic Mesomorph categorization accounted for the greatest percentage of participants (57%). The average height and body weight were 166.16 ± 4.36 cm and 59.52 ± 5.98 kg, respectively, with greater consistency in girth and skeletal breadth measurements than in skinfold thickness. Strength endurance was more stable, while cardiovascular endurance showed the greatest variability (Mean: 31.41 ± 10.77), according to the motor fitness evaluation. Using the Mor-Christian Soccer Ability Test Battery, skill evaluation showed that shooting ability was the most variable (Mean: 20.72 ± 10.83), while passing (5.53 ± 1.84) and dribbling (33.57 ± 2.37) were more consistent. Overall, the study offers important reference values for the anthropometry, motor fitness, and soccer skills of Gorkha players competing at the national level. This information helps coaches and trainers create training plans that are specifically tailored to their players' needs and pinpoint areas that need improvement, especially shooting ability and cardiovascular endurance.

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