

Flexibility of North Eastern and Southern Senior Women National Level Soccer Players

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Abstract

The aim of this study is to find out the difference of selected flexibility parameters between north eastern and southern senior women soccer players. A group of forty (n=40) female subjects aged between 18 to 30 years with (Mean \pm SD; Age 24.02 \pm 3.42 years, Height 156.86 \pm 5.57 cm, Weight 52.98 \pm 5.60 kg), who participated in senior women soccer competitions, were selected for this study from North Eastern region (Manipur, Sikkim, and Assam) and Southern region (Goa, Tamil Nadu, and Kerala) of India. The purposive sampling technique was used to attain the objectives of the study. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. The selected flexibility parameters considered for this study was Ankle Dorsi Flexion, Ankle Plantar Flexion, Knee Flexion, Knee Extension, Hip Flexion, Hip Extension, Hip Adduction, Hip Abduction, Trunk Flexion, and Trunk Extension. They were further divided into two groups of 20 each (i.e., n₁=20-north eastern soccer players and n₂=20-southern soccer players). The Independent t-tests were applied to find out the significant difference between north eastern and southern senior women soccer players on their flexibility parameters. To test the hypotheses, the level of significance was set at 0.05. It was concluded that the both groups differ significantly. The results revealed significant difference between north eastern and southern senior women soccer players on the flexibility parameters(i.e. Ankle Dorsi Flexion ('t'-value 3.33), Knee Flexion ('t'-value 8.24), Knee Extension ('t'-value -6.04), Hip Extension ('t'-value 4.32), Hip Adduction ('t'-value 5.60), Hip Abduction ('t'-value 6.38), Trunk Flexion ('t'-value 4.93), and Trunk Extension ('t'-value 5.13). However, insignificant differences were noticed with regard to the variables Ankle Plantar Flexion ('t'-value 0.00), and Hip Flexion ('t'-value 1.63).

KEYWORDS: Soccer, Flexibility and Senior Women.

Introduction

There have been a number of studies tending to show that mind and body are inseparable. A success of any sports and games can be accredited to many factors, but flexibility is the one of the most important factors. Different training methods have been commonly used to improve flexibility and related standards of performance of athletes. Flexibility is one of the fundamental things to go as our bodies enter adulthood and continue to mature and one's flexibility is a dependable method. Flexibility is a quality that can be improved, basically by focusing on it. The flexibility of a joint depends upon various parts including muscles and ligaments length and gracefulness, the state of the bones and ligament that shape the joint. Flexibility suggests the scope of development and versatility around a joint basically shows how far a body part can move around joints. Scope of movement is depends

upon bulk, the incorporating tissue, the construction of the joint, skin and muscle length (Michael, 2004). Flexibility is a significant part of actual wellness which helps in synchronizing the different complex development designs performed inside the space of seconds by a player. It assumes an extremely vital part in the anticipation of sports wounds and put in to the finesse of developments. Additionally flexibility is a fundamental piece of life even to average person who can keep away from a potential physical issue through great degree of flexibility. One of the major inquiries in flexibility research is whether joint versatility is a general element of a person.

One more examination on female college understudies and presumed that static and dynamic flexibility were two distinct elements and that particularity was not limited to joints (Harris, 1969). Sports performance of an athlete in any event mostly depends on fitness level. This is evident that the sports performance of sportsmen in various sports and games depends on huge extent on fitness abilities, as athletes aged, needs lot of high level of fitness to continue their performance. In the game specifically soccer requires the competitors to perform short runs rehashed course adjustment various leaps for north of an hour and a half. Numerous multiple times we consider the strength speed, explosiveness and agility are the main required engine parts for progress, frequently dismissing and ignoring the part of flexibility particularly thinking about women soccer. Accordingly, it turns out to be extremely applicable for a researcher to lead such a review where flexibility is a significant and fundamental part to be tried among the football playing ladies of the country. In spite of the expanded fame and professionalization of women's football all over the world, there is as yet restricted logical exploration intended for female players contrasted with their male partners, particularly in the space of players' flexibility attributes and game demands. That is why; present study was conducted to determine the significant difference between north eastern and southern senior women soccer players with regards to selected flexibility parameters.

Methodology

Participants & Measures

To obtain data for this study, the investigators had selected forty (N=40) senior women soccer players of 18 to 30 years with (Mean \pm SD; Age 24.02 ± 3.42 years, Height 156.86 ± 5.57 cm, Weight 52.98 ± 5.60 kg), who participated in senior women soccer competitions, were selected for this study from North Eastern region (Manipur, Sikkim, and Assam) and Southern region (Goa, Tamil Nadu, and Kerala) of India. They were further divided into two groups of 20 each (i.e., $n_1=20$ -north eastern soccer players and $n_2=20$ -southern soccer players). The selected flexibility parameters considered for this study was Ankle Dorsi Flexion, Ankle Plantar Flexion, Knee Flexion, Knee Extension, Hip Flexion, Hip Extension, Hip Adduction, Hip Abduction, Trunk Flexion, and Trunk Extension. The purposive sampling technique was used to obtain the required data. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. Keeping view a feasibility criteria and relevance of the variables in the study. The Flexibility level of each selected subject was tested by administering the flexi test given by Araujo in presence of an assistant to help in administering the test. Flexibility was measured via Flexi test, evaluates the maximal passive range of motion of 10 joint movements. The movement is always initiated at the base figure (typically that equivalent to value 0) towards greater joint amplitude.

A Numerical grade was then assigned based on the value shown on the evaluation map mentioned in the book of flexi test that corresponds to the maximal range of motion obtained. Three trials were performed, and the maximum result recorded.

Data Analysis

Descriptive statistics (Mean, Standard Deviation, Skewness, Kurtosis, Standard Error of Skewness and Standard Error of Kurtosis) were calculated for all measures. Data screening was used to ensure all dependent variables met the assumptions necessary for the use of parametric statistics before data analysis. In addition, independent t-tests were used to test the between-group differences between selected flexibility parameters. P values ≤ 0.05 were considered statistically significant. Statistical Package for Social Science (SPSS) version 20.0 was used.

Results and Discussion

Descriptive data for responses to the North East and Southern senior elite women elite soccer players on flexibility parameters are shown in Table 1. Measures of skewness and kurtosis found the data to be normally distributed and as such use of parametric statistics was deemed appropriate. Results of the independent t-test are presented in Table 2.

Table 1: Descriptive Statistics of North East and Southern Senior Women Soccer Players on Flexibility

		Mean		Std.	Skewness		Kurtosis	
		Statistic	Std. Error	Deviation	Statistic	Std. Error	Statistic	Std. Error
Ankle Flexion	Dorsi	2.55	0.10	0.64	0.737	0.374	-0.395	0.733
Ankle Flexion	Plantar	2.65	0.09	0.59	0.204	0.374	-0.640	0.733
Knee Flexion		2.85	0.15	0.95	0.124	0.374	-1.562	0.733
Knee Extension		1.80	0.11	0.72	0.325	0.374	-0.984	0.733
Hip Flexion		3.08	0.11	0.69	-0.585	0.374	0.954	0.733
Hip Extension		2.80	0.14	0.88	-0.292	0.374	-0.553	0.733
Hip Adduction		2.60	0.21	1.35	-0.971	0.374	-0.290	0.733
Hip Abduction		2.75	0.17	1.06	-0.430	0.374	-0.967	0.733
Trunk Flexion		2.80	0.10	0.65	0.214	0.374	-0.585	0.733
Trunk Extension		2.90	0.14	0.87	-0.779	0.374	1.562	0.733

N=40

For testing the normality of the data (Table 1) skewness and kurtosis (descriptive statistics) has been performed. Since none of the variables skewness is greater than twice its standard error, hence all the variables are symmetrically distributed. Similarly, the value of kurtosis for the data to be normal of any of the variable is not more than twice its standard error of kurtosis hence none of the

kurtosis values are significant. In other words the distribution of all the variables is meso-kurtic.

The results pertaining to significant difference, if any, between North East and Southern senior women soccer players on flexibility parameters were assessed using the independent t- test and the results are presented in Table 2.

Table 2: Comparative Statistics of North East and Southern Senior Women Soccer Players on Flexibility

Variables	Levene's Test		North East Southern Players				Mean Difference	SE of Mean Difference	t-value	Sig.(p-value)
	F-value	Sig.(p-value)	North Players =20	East =20	Southern Players =20	SD				
Ankle Dorsi Flexion	1.62	0.21	2.85	0.67	2.25	0.44	0.60	0.18	3.33	0.00*
Ankle Plantar Flexion	3.04	0.09	2.65	0.67	2.65	0.49	0.00	0.19	0.00	1.00
Knee Flexion	3.89	0.06	3.60	0.60	2.10	0.55	1.50	0.18	8.24	0.00*
Knee Extension	0.12	0.73	1.30	0.57	2.30	0.47	-1.00	0.17	-6.04	0.00*
Hip Flexion	0.51	0.48	3.25	0.55	2.90	0.79	0.35	0.21	1.63	0.11
Hip Extension	0.00	1.00	3.30	0.73	2.30	0.73	1.00	0.23	4.32	0.00*
Hip Adduction	51.37	0.00	3.50	0.51	1.70	1.34	1.80	0.32	5.60	0.00*
Hip Abduction	1.66	0.21	3.50	0.61	2.00	0.86	1.50	0.24	6.38	0.00*
Trunk Flexion	1.11	0.30	3.20	0.52	2.40	0.50	0.80	0.16	4.93	0.00*
Trunk Extension	0.10	0.75	3.45	0.60	2.35	0.75	1.10	0.21	5.13	0.00*

*Significant at 0.05 level; Degree of freedom= 38

Table 2 presents the results of North East and Southern Senior Women Soccer Players with regard to the variable of flexibility parameters. The descriptive statistics shows the mean and SD values of North East Senior Women Soccer Players on the sub-variable Ankle Dorsi Flexion as 2.85 and 0.67, Ankle Plantar Flexion as 2.65 and 0.67, Knee Flexion were 3.60 and 0.60, Knee Extension were 1.30 and 0.57, Hip Flexion were 3.25 and 0.55, Hip Extension were 3.30 and 0.73, Hip Adduction were 3.50 and 0.51, Hip Abduction were 3.50 and 0.61, Trunk Flexion were 3.20 and 0.52, Trunk Extension were 3.45 and 0.60 respectively. However, the Southern Senior Women Soccer Players mean and SD values on the sub-variable Ankle Dorsi Flexion as 2.25 and 0.44, Ankle Plantar Flexion as 2.65 and 0.49, Knee Flexion were 2.10 and 0.55, Knee Extension were 2.30 and 0.47, Hip Flexion were 2.90 and 0.79, Hip Extension were 2.30 and 0.73, Hip Adduction were 1.70 and 1.34, Hip Abduction

were 2.00 and 0.86, Trunk Flexion were 2.40 and 0.50, Trunk Extension were 2.35 and 0.75 respectively. The comparison of mean scores of both the groups has been presented graphically in Figure 1.

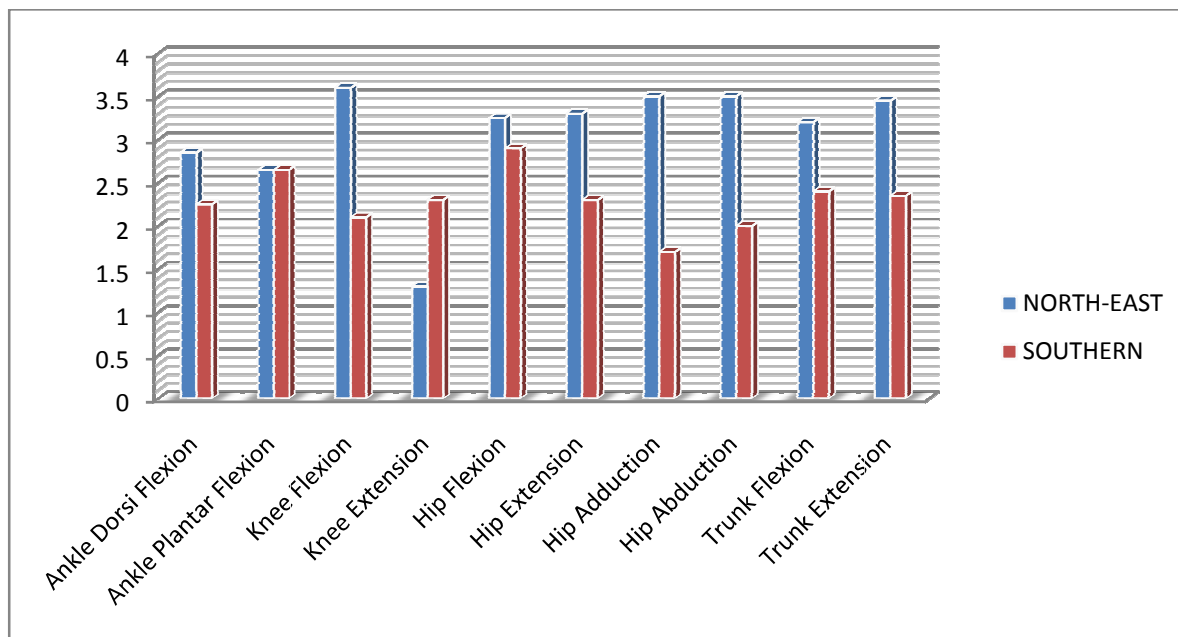


Figure 1: Graphical Representation of Mean Score of North East and Southern Senior Women Soccer Players on Flexibility Variables

From Table 2, F- and T-table for the testing of variances and equality of means of two unrelated groups of North East and Southern Senior Women Soccer Players in different flexibility parameters with regard to Ankle Dorsi Flexion, Ankle Plantar Flexion, Knee Flexion, Knee Extension, Hip Flexion, Hip Extension, Hip Adduction, Hip Abduction, Trunk Flexion, and Trunk Extension. To test the equality of variances, Levene’s test was used. The F-value is insignificant as the p-value is more than 0.05. Thus, the null hypothesis of equality of variances may be accepted, and it is concluded that the variances of the two groups are equal. Except the variable Hip Adduction, the F-value is significant as the p-value is less than 0.05. Thus, the null hypothesis of equality of variances may be rejected, and it is concluded that the variances of the two groups are not equal in this variable.

From Table 2, it can be clearly seen that eight of the variables has shown significant differences i.e. Ankle Dorsi Flexion, Knee Flexion, Knee Extension, Hip Extension, Hip Adduction, Hip Abduction, Trunk Flexion, and Trunk Extension between North East and Southern Senior Women Soccer Players except Ankle Plantar Flexion (‘t’-value 0.00), and Hip Flexion (‘t’-value 1.63). The ‘t’-value shown in the table above were found statistically insignificant ($P > 0.05$). The significant value of ‘t’ at 0.05 levels for degree of freedom 38 is 2.02 and in eight of the variables i.e. Ankle Dorsi Flexion (‘t’-value 3.33), Knee Flexion (‘t’-value 8.24), Knee Extension (‘t’-value -6.04), Hip Extension (‘t’-value 4.32), Hip Adduction (‘t’-value 5.60), Hip Abduction (‘t’-value 6.38), Trunk Flexion (‘t’-value 4.93), and Trunk Extension (‘t’-value 5.13) between North East and Southern Senior Women Soccer Players. The motivation behind the current exploration was to think about the flexibility factors of North East

and Southern Senior Women Soccer Players. As the consequences of this exploration shows from the findings of Table 2 with respect to flexibility factors that huge contrasts have been seen on the sub-factors; Ankle Dorsi Flexion, Knee Flexion, Knee Extension, Hip Extension, Hip Adduction, Hip Abduction, Trunk Flexion, and Trunk Extension between North East and Southern Senior Women Soccer Players. The poor adaptability displayed by more seasoned players in these ROM may likewise mirror a versatile reaction to playing soccer of delicate tissue around the joints that further develops solidness at the particular joint, or absence of regard for adaptability rehearses in preparing (Ostojic&Stojanovic, 2007). Indeed, even inside similar game, the ideal qualities rely upon the requests of the players' situation and age; the goalkeeper will require particular furthest point range of motion than the field player, and the distinctions in the development designs created by kids and youths will conceivably require different levels of ROM (Kellis&Katis, 2007). Daneshjoo,Rahnama, & Mokhtar, (2003) tested youthful players and tracked down various outcomes, noticing an essentially more adaptable prevailing appendages than the non-predominant appendages. These different outcomes can be made sense of by the effect on the adaptability from age, preparing time, kind of preparing, maturational interaction, and past wounds, among different elements. A few past examinations have likewise shown comparative expansions in more established soccer players' hamstring adaptability in correlation with their more youthful partners utilizing the sit-and-reach test (Nikolaïdis, 2012). During the youth and pre-adulthood ages the development of bone and muscle assume significant parts in force advancement, outer muscle stacking and engine control during adolescence. Differential bone development (femur) comparable to muscle length can bring about a reduction in adaptability (hamstring) and strength (De Ste Croix &Korff, 2013). In sport, it has been seen that adaptability is likely to sex (Gomez-Landero, Vernetta & Lopez-Bedoya, 2013; Kibler& Chandler, 2003),Proof recommends that natural changes, for example, ligament solidifying, joint case changes, or muscle changes could be capable variables for the age-related decline in flexibility (Adams, Oshea&Oshea, 1999). Hence, the consideration of game explicit adaptability work in preparing schedules could assist with expanding the range of motion values and to further develop sport execution. The suitable extending conventions and responsibilities must be chosen by the experts to increment adaptability and to keep up with it all through the unmistakable phases of youth actual turn of events, following the proposals proposed by Lloyd & Oliver (2012).

Conclusions

Flexibility is a fundamental piece of life even to average person who can keep away from a potential physical issue through great degree of flexibility. In conclusion, the discoveries of this exploration would be important in helping players and instructors to manage the flexibility factors of the players particularly in higher level of competitions.To generalize these findings to Indian women soccer players, we propose additionally explores to survey the model of this examination in other novice players of soccer.It is imperative that this perception is well defined for this example bunch, having the option to see or not, to different gatherings of youthful competitors.

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