RELATIONSHIP OF SELECTED STRENGTH AND FLEXIBILITY MEASURSE TO PLAYING ABILITY IN HANDBALL

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ABSTRACT
The study was conducted on 20 male handball players of Laxmibai National Institute of Physical Education, Gwalior. The purpose of the study was to determine the relationship of selected strength and flexibility measure to playing ability in handball. For measuring the strength, arm strength was measured by counting number of push-ups, abdominal strength by leg dynamometer and grip strength by using grip dynamometer, wrist and ankle flexibility were measured by monometer, trunk flexibility by bend and reach test and the shoulder flexibility by rod centimeters and metric scale. Product moment correlation was employed to study the relationship of selected strength the flexibility measure to playing ability in handball; the correlation revealed that leg strength was highly significant to handball playing ability as compared to other selected strength measures as obtained value of correlation (r = 0.90) was much higher as compared to 0.040 value for correlation to be significant at 0.05 level. The other strength measures of arm strength, grip strength and abdominal strength also showed significant relation to handball playing ability. Shoulder flexibility showed high correlation to handball playing, ability, other flexibility measures showed insignificant correlation to handball playing ability.
Keywords: Strength, Flexibility, Playing Ability and Dynamometer

INTRODUCTION

These days scientific method of selection and training are applied to achieve the best possible results in the complete training of the sportsman, systematic development of several areas (physical fitness, motor realities, technical and tactical) is to be emphasized and for this the coaches and teachers of physical education must have the knowledge of relevant physical and motor fitness qualities to be possessed and developed by their sportsman along with technical and tactical knowledge. Handball requires stamina, strength speed and agility, general athleticism in every form plays an important role. Handball is an excellent sport for developing and maintaining physical fitness. It also presents a real challenge to its participants. It provides them with a wonderful opportunity to develop strength, endurance, agility, coordination and other physiological benefits. Therefore, through the present study we attempt has been made to scientifically establish the relationship of selected strength and flexibility measures to the performance in handball.

Methodology

The subjects for this study move male handball players of LNIPE, Gwalior, and the following tests were conducted to test the strength and flexibility measures of handball players.

- Arm strength-number of correctly executed push-ups.
- Abdominal strength-number of correctly executed bent knee sit-ups.
- Leg strength-in kilogram by leg dynamometer.
- Grip strength-in kilogram by grip dynamometer.
- Ankle and wrist flexibility in decrease by using goniometer.
- Trunk flexibility-bent and reach test in centimeters.
- Shoulder flexibility-road centimeters and meter scale in c.m.
- To judge the playing ability of subjects a five point rating scale was used by a panel of three experts of handball. For this all the subjects were divided into two teams and they were put in a real game situation and each of the experts on the basis of five point rating scale assessed each individual players and then according to the individuals performance. The playing ability score was the average of the three experts' ratings.

Analysis of the data and results of the study

Test-retest method of establishing reliability was used to determined reliability of performance of the subject on various tests before the actual collection of data.

TABLE-1
COEFFICIENTS OF RELIABILITY OF TEST-RETEST SCORES

Variable	Test	Coefficient of Correlation
Arm strength	Push-ups	92
Abdominal Strength	One minute bent knee	98
Leg Strength	Leg Dynamometer	90
Grip Strength	Grip Dynamometer	90
Wrist and Ankle Flexibility	Goniometer	95
Trunk Flexibility	Bent and Reach test	90
Shoulder Flexibility	Rod centimeter meter scale	98

*Significant at 0.05 levels.

The coefficients of correlation obtained for relationship of the selected strength and flexibility measures to handball playing have been present in table-2 and table-3.

TABLE-2
RELATIONSHIP OF ARM STRENGTH, ABDOMINAL STRENGTH, LEG STRENGTH AND GRIP STRENGTH TO PLAYING ABILITY AND HANDBALL

Variables	Coefficients of Correlation
Arm Strength and handball ability	0.74
Abdominal strength and handball playing ability	0.66
Leg strength and handball playing ability	0.90
Grip strength (Right hand) and ball-playing ability	0.78
Grip strength (Left hand) and handball ball-playing	0.68

*Significant at 0.05 levels.

Table-2 indicates that leg strength dominates in its relationship to hand ball playing ability as compared to the other selected strength measures as the obtained value of correlation (rx .90) is much higher as compared to 0.39 value required for the correlation to be significant at 0.05 level with 18 degree of freedom. The same table further reveals that the strength measures of arm strength and abdominal strength and grip strength also show, significant but comparatively low relationship the handball playing ability.

TABLE-3
RELATIONSHIP OF WRIST FLEXIBILITY, ANKLE FLEXIBILITY, TRUNK FLEXIBILITY AND SHOULDER FLEXIBILITY TO PLAYING ABILITY IN HANDBALL

Variables	Coefficients of Correlation 'r'
Wrist flexibility (Right hand) and Handball Playing ability.	0.03[b]
Ankle flexibility (Right hand) and Handball Playing ability.	0.37[b]
Ankle flexibility (Left foot) and Handball Playing ability.	0.26[b]
Trunk flexibility and Handball Playing ability.	-0.10[b]
Shoulder flexibility and Handball Playing ability.	0.78[b]

Significant at 0.05 level of significance.

Table-3 indicates that leg strength dominates in its relationship to handball playing ability as compared to the other selected strength measures as the obtained value of correlation (rx .90)s is much higher as compared to 0.39 value required for the correlation to be significant at 0.05level with 18 degree of freedom[4].

FINDINGS

The finding with regard to table 3 revealed that the strength measured (Leg strength, arm strength, abdominal strength & grip strength) contributes significantly to the playing ability in the handball with leg strength dominating on other three. This may be due to the fact that they are big muscles relatively to others. Arm strength is the second most dominating factor. This may be due to the fact that the handball playing ability depends on players' ability to throw and block many times and is also required to throw long passes sometimes. The shooting and defending involve lots of repeated arm action and thereby the arm strength might have dominated.

The insignificant and relatively low correlation of strength of right grip and left grip with handball playing ability may be due to the fact that in the game of handball a player is not allowed to hold the ball and the ball cannot rest but the strength of right grip showing a better correlation as compared to left grip may be due to the reason that the majority of the players are right handed and they use their right hand for shooting and passing.

Trunk flexibility showed a negative but insignificant correlation to handball playing ability and other measures of flexibility showed positive but very low and insignificant relationship.

Trunk flexibility showing a negative but insignificant correlation may be due to the fact that the test involved a forward bent and reach and this movement is contradictory to the players backward bending movement.

CONCLUSIONS

With in the limitations identified and on the basis of the results of the study the following conclusions were drawn:

Arm strength, abdominal strength, grip strength and leg strength were significantly selected to playing ability in handball.

Shoulder flexibility contributed significantly to playing ability in handball.

Wrist flexibility and ankle flexibility had insignificantly relationship to playing ability in handball.

Trunk flexibility showed negative but insignificant correlation to playing ability in handball.

REFERENCES:

Clarke. H.Harrison and Clarke, H.David, (1970).Research Process in Physical Education, Recreation and Health, Englewood cliffs, N.J.: Prentice Hall Ind.,

Delres, Mann. (1967) "The Relationship of Strength and Flexibility to Free Running Speed, Completed Research in Health, Physical Education and Relation 10:96

Hockey, Robert V. Physical Fitness: (1973).The Pathway to Healthful Living. (St. Louis: The C.V.Mosby Co.)
Johnsong, Mr. Barry. L and Nelson, jack k. (1982) Practical Measurements for Evaluation in Physical Education. Delhi: Surjeet Publication,.
Recard Roberson and Herbertoison, (1976): "Beginning Handball", (California: Woods worth publishing company. Ins. Belmost P.1.
Singh, Hardayal, (1982), Sports Training General Theory and Methods, (Patiala: Netaji Subhash National Institute of Sports) P.211.