Influence of core functional training on leg strength and flexibility among high school soccer players

N ChandraKumar, Dr. C Ramesh

Abstract
The purpose of the study was to find out the influence of core functional training on leg strength and flexibility among high school soccer players. In order to achieve the purpose of the study 24 high school male football players were randomly selected from Oddanchatram Town and they were equally divided in to two groups of 12 each as experimental and control group. The experimental group and control group undergone normal routine football practices and in addition the experimental group undergone core functional training for one hour in the morning before starting the football practices. The control group was not given any special training. The period of training was 8 weeks in a schedule of weekly 5 days. The data were collected on the selected variables before and after the training period. Analysis of Covariance (ANCOVA) was used to analyze the data. To test the significance 0.05 level of confidence was fixed. Based on the results the study it was concluded that the core functional training was significantly improved the leg strength and flexibility among high school soccer players.

Keywords: Core Functional Training, Leg strength, Flexibility

1. Introduction
Functional training is defined as movements or exercises that improve a person’s ability to complete their daily activities or to achieve a specific goal. It is not a series of exercises deemed functional by some manual. Doing movements in the gym that strengthen the muscles involved in the movements you wish to improve outside the gym is a good start. This does not mean you can simply add weight to the exact movement you wish to enhance. (Brooks. G.A, 1996) [1].

There is research that has proven doing this can actually be detrimental to some athletic movements. When a baseball player adds weight to his bat that can actually slow his bat speed down because the added resistance changes the forces on the joint and disrupts mechanics. All exercises have some functional value when applied correctly this value is determined by the exercises transferable benefit outside the gym (Ralph Richards, 1999) [6].

Every exercise has a functional limitation and it is up to the trainer to understand what it is. A quality program focuses on weak areas and sets specific goals for the client. It is important to understand how to progress someone from simple smaller targeted movements to more complex multi joint movements. Training someone functionally can range from having a tennis player lunge to a chop or a body builder do a slow curl for bigger biceps; it’s all about the goal. Keep in mind performing complex movements before the client is ready will do more harm than good. (Charles De Francesco and Dr Robert Inesta, 2010) [4].

Football is a strenuous game which requires all the physical fitness qualities. To improve the physical fitness qualities they involved in various training programme. The present study was also with the aim to improve the physical fitness qualities through functional training. With analyzing various important fitness qualities of the leg strength and flexibility were selected as criterion variables. In the present study Leg exercise tone and strengthen powerful muscle groups that you use every day. A well-considered Leg exercise programme will result in improved athletic performance, as well as overall fitness. (Uppal A.K, 1998) [8].

Flexibility refers to the absolute range of movement in a join or series of joints that is attainable in a momentary effort with the help of a partner or a piece of equipment flexibility in some joints can be increased to a certain degree by stretching. The qualities of leg strength and flexibility are essential for Football performance. (Burn, John W, 1964) [2].
2. Methodology
The purpose of this study was to investigate the influence of core functional training on leg strength and flexibility among high school soccer players. In order to achieve the purpose of the study 24 high school male football players were selected randomly and they were equally divided into two groups of 12 each as experimental and control group. The experimental group and control group undergone normal routine football practices and in addition the experimental group (EG) undergone core functional training for one hour in the morning before starting the football practice. The control group (CG) was not given any special training. The period of training was 8 weeks in a schedule of weekly 5 days. The data were collected on the selected variables of leg strength and flexibility before and after the training period. Analysis of Covariance (ANCOVA) was used to analyze the data. To test the significance 0.05 level of confidence was fixed.

2.1 Criterion Measures

Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Test</th>
<th>Measurers in Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg Strength</td>
<td>1 RM</td>
<td>Kilograms</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Sit and Reach</td>
<td>Centimeters</td>
</tr>
</tbody>
</table>

2.2 Training Programme
The eight weeks Core Functional training included the following
1) Quadruped arm raise
2) Quadruped leg raise
3) Quadruped arm and leg raise
4) Quadruped arm raise with knees on a ½ foam roller
5) Quadruped leg raise with knees on a ½ foam roller.
6) Quadruped leg raise with knees on a ½ foam roller and hands on dyna disc.
7) Knee planks
8) Knee plank with foam roller
9) Full plank
10) Plank with leg raise
11) Plank on roller
12) Plank on ball with airex pad under feet
13) Upper back only cat camels
14) Low back only cat camel
15) Cat camel
16) Cat camel with eyes closed
17) Cat camel on half foam roller.
18) Static glute bridge
19) Two leg glute bridge
20) Two leg glute bridge with band around knees
21) Two leg glute bridges with feet on airex pad
22) 1 leg glute bridge
23) 1 leg glute bridge on dyna disc. (Kurt and Vreet, 2006) [5].

2.3 Results and Discussion
The analysis of covariance on the data obtained on Leg strength, Flexibility of Experimental and Control groups have been analyzed and tabulated in Table-II and Table-III.

Table 2: Analysis of covariance of Experimental and Control Groups on Leg strength

<table>
<thead>
<tr>
<th>TEST</th>
<th>CG</th>
<th>EG</th>
<th>SV</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>125.00</td>
<td>130.83</td>
<td>Between 204.17</td>
<td>1</td>
<td>204.17</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Within 14991.67</td>
<td>22</td>
<td>681.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>127.50</td>
<td>147.92</td>
<td>Between 2501.04</td>
<td>1</td>
<td>2501.04</td>
<td>4.12*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Within 13347.92</td>
<td>22</td>
<td>606.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted mean</td>
<td>130.17</td>
<td>145.25</td>
<td>Between 1345.72</td>
<td>1</td>
<td>1345.72</td>
<td>35.76*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Within 790.19</td>
<td>21</td>
<td>37.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean diff</td>
<td>2.50</td>
<td>17.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant at 0.05 level of confidence. df (1and22)=4.04 and df (1and22)=4.05

The table-II shows the F value of pretest, posttest and adjusted mean of experimental and control group. The F value of pretest was 0.30 (df 1and22 =4.04) and it was lower than the table value which indicates that there was no significant difference in pretest. The F value of posttest was 4.12 (df 1and22 =4.04) and adjusted mean was 35.76 (df 1and22 =4.05). Both the F value of posttest and adjusted posttest were more than the table value and it indicates that there was a significant difference in the post test as well as adjusted posttest.

The results of this study revealed the influence of core functional training in improving leg strength among high school soccer players.

Table 3: Analysis of covariance of Experimental and Control Groups on Flexibility

<table>
<thead>
<tr>
<th>TEST</th>
<th>CG</th>
<th>EG</th>
<th>SV</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>31.08</td>
<td>32.50</td>
<td>Between 12.04</td>
<td>1</td>
<td>12.04</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Within 313.92</td>
<td>22</td>
<td>14.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>32.33</td>
<td>36.25</td>
<td>Between 92.04</td>
<td>1</td>
<td>92.04</td>
<td>9.17*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Within 13347.92</td>
<td>22</td>
<td>10.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted mean</td>
<td>32.89</td>
<td>35.69</td>
<td>Between 45.34</td>
<td>1</td>
<td>45.34</td>
<td>36.20*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Within 26.31</td>
<td>21</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean diff</td>
<td>1.25</td>
<td>3.75</td>
<td></td>
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</tr>
</tbody>
</table>

Significant at 0.05 level of confidence. df (1and22)=4.04 and df (1and22)=4.05

The table- III shows the F value of pretest, posttest and adjusted mean of experimental and control group. The F value of pretest was 0.84 (df 1and22 =4.04) and it was lower than the table value which indicates that there was no significant difference in pretest. The F value of posttest was 9.17 (df 1and22 =4.04) and adjusted pot test mean was 36.20 (df 1and22 =4.05) and it indicates that there was a significant difference in the post test as well as adjusted posttest.

The results of this study revealed the influence of core functional training in improving flexibility among high school soccer players.
2.4 Discussion
In the resent times core functional training is offered as a better method for developing leg strength and flexibility. The results and discussion of the present study proved that the said training procedure was beneficent for improving the leg strength and flexibility.

3. Conclusion
On the basis of results and discussion of the study following conclusion were drawn.
1. The core functional training had significantly improved the leg strength and flexibility of high school soccer players.
2. There was significant difference among the adjusted post-test mean of experimental group and control group on leg strength and flexibility.

4. Recommendations
1. Similar study may be conducted for various age groups.
2. The same study may be extended to further time period.
3. The present study is mainly focused on males only. The same study may be done on females.

5. References
6. Ralph Richards, Have a Ball with Swiss Ball Training, Western Australia, Wais Publication, 1999.
SAQ training is thought to enable soccer players to become better at reacting to stimuli, improve acceleration, move effectively in multiple directions and change direction or stop. quickly to make a play in a fast, efficient, smooth, and repeatable manner (Polman et al., 2009). Furthermore, SAQ training involves speed, agility and quickness through a range of soccer specific exercises such that exercises are performed with optimal movement patterns thought to optimise muscle recruitment and consequently save energy and time (Jovanovic et al., 2011). Therefore, the aim of this research was to determine the effects of SAQ training on speed and flexibility in young soccer players. 2. Methods. 2.1 Participants. Soccer is a sport in which combinations of various physical fitness, including sprinting, changing direction, dribbling, walking, and running, occur repeatedly over a 90-min period (Lehance et al., 2009). To perform these actions at a high level, it is important to create optimal movement patterns based on the core, balance, range of motion, and coordination (Imai et al., 2014; Myer et al., 2005). Using the Functional Movement ScreenTM to evaluate the effectiveness of training. J Strength Cond Res. 2012;26:1620–1630. García-Pinillos F., Ruiz-Ariza A., Moreno del Castillo R., Latourre-Román P., Nesser TW, Huxel KC, Tincher JL, Okada T. The relationship between core stability and performance in division I football players. J Strength Cond Res. 2008;22:1750–1754. Finally, a higher-scored left-leg active straight leg raise was related to a poorer unilateral vertical and standing broad jump [21]. The influence of the FMS on performance variables was also tested in the male youth soccer player context [20] and significant correlations were found. The Melgaço School of Sports and Leisure biomechanics laboratory. This fact and the increased training volume in the older players may mediate the results, as there are no significant differences between FMS scores and competitive levels. In soccer practice, the quadriceps muscle group plays an important role in jumping and ball kicking and the hamstring controls the running activities and stabilizes the knee during turns or tackles [36]. gym-based strength training, for legs, core, and shoulder. Flexibility training in football. Flexibility (in general) training seems to be a topic that is underestimated in performance, improving performance and injury prevention. Flexibility can be seen/measured as Range of Motion (ROM) and it displays the degree of movement that occurs at a joint (7). As Baechle and Earle stated (53) the ROM of a particular joint is determined by a number of factors such as connective tissue structure, activity level of the player, age and gender. Combined high-intensity strength and speed training program on the running and jumping ability of soccer players. J. Strength. Cond. Plyometric training on sprint and jump performance in professional soccer players. J. Strength. Cond. Plyometrics and Flexibility Training for Explosive Martial Arts Kicks and Performance Sports Plyo Train Your Mind, Change Your Brain: How a New Science Reveals Our Extraordinary Potential to Transform Ourselves. 298 Pages·2007·1.42 MB·70,714 Downloads·New! of mindfulness, a Train Your Mind, Change Your Brain: How a New Science Reveals Our Extraordinary Potential to Transform Ourselves. 298 Pages·2007·1.42 MB·70,714 Downloads·New! exercise and drill that is discussed in the text Sport Speed and Agility Training. 384 Pages·2010·14.78 MB·7,547 Downloads·New! exercise and drill that is discussed in the text Sport Speed and Agility Training.