INTRODUCTION

Taekwondo is the Korean martial art which is characterised by fast, high, and spinning kicks. The name means “the art of kicking and punching”. It is the most popular martial art in the world, studied in over 140 countries and practised by a million participants of all ages every day. Earlier research shows the requirement of aerobic and anaerobic capacity for Taekwondo (Goa et al. 1998; Melhim 2001).

Markovic et al. (2005) examined the differences between successful and less successful Croatian national Taekwondo champions and found that successful athletes achieved significantly higher maximum running speed, significantly higher ventilatory anaerobic threshold at significantly lower heart rate, significantly higher explosive power, anaerobic alactic power and lateral agility somewhat lower body fat (2.3%), and were slightly taller (by 5.8 cm) than less successful athletes. On the other hand, earlier researches clearly show the possession of specific anthropometric qualities alone cannot guarantee a gold medal. Success in competition is indeed a combination of physical attributes, talent, skill, technique, determination, strategy and psychological preparedness.

Success in Taekwondo depends heavily upon the athlete’s explosive leg power and muscular strength. The athlete must be able to use strength as quickly and forcefully as possible. This display comes in the form of speed-strength or power (Yessis, & Hatfield 1986). Power represents the amount of work a muscle can produce per unit of time. An increase in power gives the athlete the possibility of improved performance in sports in which the improvement of the speed-strength relationship is sought (Paul, et al, 2003).

Strength is the necessary ability for performing most physical movements and activities. A great body of research has been carried out over the last fifty years, providing a firm scientific grounding for resistance training and its application in health and sports (Fereshteh Shahidi et al. 2012). Advances in the area of muscle strength have perfected training programs in different sports (Fereshteh Shahidi et al. 2012). The scientific findings some of which examine schoolchildren suggest the positive effects of resistance training on the progress of athletes’ performance and progressive strength training can lead to substantial increases in maximal strength and mass of trained muscles, even in older women and men (Fereshteh Shahidi et al. 2012). Similarly, plyometric training and have shown that it improves power output and increases explosiveness (Adams et al. 1992; Ioannis et al. 2000) by training the muscles to do more work in a shorter amount of time (Holcombe 1996). Plyometric exercises that exploit the stretch-shortening cycle have been shown to enhance the performance of the concentric phase of movement (Gehri et al., 1998) and increase power output (Adams et al. 1992; Paul et al. 2003). Yoga is a unique Indian tradition of ancient origin for health and happiness. It imparts both sound body and sound mind to the practitioner. The purpose of the study is to find out the effect of varied modalities of resistance and plyometric
training and yogic practices on anaerobic power among taekwondo competitors

**METHODS**

**Subjects and variable**

Sixty (60) male taekwondo athletes were selected from Sreenivasa college of Arts and Science, perambalur, Tamil Nadu. These subjects were studying bachelors degree in Arts and Science College were randomly selected and their age ranging between 18 to 25 years. Anaerobic power was selected as criterion variable and measured through Margaria-Kalamen power test.

**Experimental design**

The study was formulated as a pre and post test random group design, in which sixty male students were randomly assigned into four equal groups and each group consisting of 20 subjects each. Group I underwent resistance training with yogic practices programme (RTYP) and Group II underwent plyometric training with yogic practices programme (PTYP) and Group III act as a control group who did not undergo any above mentioned special training programme. The subjects were tested on anaerobic power before and after 12 weeks of training.

**Training**

The subjects performed yogic practices for 30 minutes and followed by either resistance training or plyometric. The resistance training was performed for 3x8 with 60% of load for first four weeks followed by 60-80% for next four weeks and 80% for last four weeks. The recovery 3 minutes initially and it was increased to 5 minutes for subsequent weeks between sets. Similarly, plyometric training was administered based on foot contact from low to high intensity exercises.

**Statistical technique**

Analysis of co variance (ANCOVA) was applied to determine whether the two programmes of training produced significantly different improvements in selected variables after 12 weeks of training. Since the initial means were not matched, comparisons between actual could not be made, all means were adjusted by regression to a common mean. The significance of difference of pairs of adjusted final group means was tested for significance by applying Scheffe’s post hoc test. Further, the group means gains recorded by the various groups during the experimental period of twelve weeks to the criterion measures were tested for significance by applying paired ‘t’ test. In all the cases 0.05 level of confidence was utilized.

**RESULTS**

Table 1 clearly show that resistance and yoga practices and plyometric and yoga practices significantly improved anaerobic power as the obtained t ratio are 16.22 and 3.87 which is greater than required table value for 1, 14 degrees of freedom 3.09. It is inferred that 12 weeks of training is effective enough to improve anaerobic power of taekwondo.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Variables</th>
<th>Pre Test mean ± σ</th>
<th>Post test mean ± σ</th>
<th>Mean difference</th>
<th>SDM</th>
<th>'t' ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTYP</td>
<td>Anaerobic</td>
<td>573.8 ± 87.68</td>
<td>636.5 ± 89.35</td>
<td>62.2</td>
<td>3.83</td>
<td>16.22*</td>
</tr>
<tr>
<td>PTYP</td>
<td>Power</td>
<td>573.65 ± 82.6</td>
<td>593 ± 79.47</td>
<td>19.35</td>
<td>5.01</td>
<td>3.87*</td>
</tr>
<tr>
<td>CON</td>
<td>(Watts)</td>
<td>573.5 ± 54.74</td>
<td>574 ± 55.39</td>
<td>0.5</td>
<td>1.90</td>
<td>0.26</td>
</tr>
</tbody>
</table>

**DISCUSSION**

This study illustrates that a combined resistance training with yogic practices and plyometric training with yogic practices showed significant improvement in anaerobic power among taekwondo. This finding probably is related to the nature of muscular strength, that strength is increased in low movement
of the phase of eccentric contraction more than during the fast movement of this phase; therefore, a weight training program increases strength more than plyometric training. Weight and plyometric training programs involve eccentric and concentric contractions, but in weight training programs the velocity of the contraction is slower than in plyometric training. Previous studies have documented that strength was increased more during the low velocity movement of the phase of eccentric contraction than during the high velocity of this phase; therefore, a weight training program may stimulate greater strength adaptations. Ronnestad and his colleagues (2008) found that strength training leads to significant gains in strength and power-related measurements in professional soccer players. The combination of strength and yogic practices showed significant improvement in anaerobic power.

According Bera and Rajapurkar (1993) the metabolic activity the slow twitch (ST) and fast twitch (FT) muscle fibres are further classified into slow oxidative (SO), fast glycolytic (FG) and fast oxidative glycolytic (FOG) fibres (4). The SO fibres have capacity for aerobic power, the FG fibres contribute to anaerobic and FOG fibres are responsible for both the aerobic and anaerobic power. Their study showed that yoga training improved both the cardiovascular endurance and anaerobic power. This may be due to a balanced conversion takes place between three fibre types (FCG, SO, FG). As the basic nature of yoga is to maintain ‘balance’ or homeostasis/or equilibrium, similar mechanism perhaps operates in the present study leading to increase both the cardiovascular endurance and anaerobic power along with significant change in body composition.

CONCLUSION

It may be concluded from the result of the study that both the resistance training with yogic practice group and plyometric training with yogic practice group was a better tool to improve the anaerobic power anaerobic power among college taekwondo competitors. In comparison resistance training with yogic practice improved better than the plyometric training with yogic practice.

References


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