



A Yogic Approach to Neuromuscular Reeducation for Improving Explosive Power in Young Handball Players

 Dr. P. Yoga^{1*}

¹Assistant Professor, Alagappa University College of Physical Education, Alagappa University, Karaikudi, Tamilnadu, India.

DOI: <https://doi.org/10.70333/ijeks-04-02-016>

*Corresponding Author: yogap@alagappauniversity.ac.in

Article Info: - Received : 02 July 2024

Accepted : 27 July 2024

Published : 30 August 2024

Abstract

The objective of the present study was to examine the effectiveness of a selective yogic intervention combined with neuromuscular reeducation on enhancing the explosive power of youth handball players. A total of thirty youth players aged between 14 and 18 years were selected from Sivaganga, Tamil Nadu, India, during the year 2024. These players were randomly assigned into two equal groups: an experimental group and a control group, each comprising fifteen participants. The experimental group underwent a six-week training program integrating specific yogic practices and neuromuscular reeducation techniques, conducted five days per week. Meanwhile, the control group did not engage in any such intervention and continued their usual activities. The variable used to measure performance was explosive power, assessed using the standing broad jump test both before and after the training period. Statistical analysis was carried out using the paired 't'-test to determine the significance of differences between pre-test and post-test scores within and between the groups. The findings revealed a statistically significant improvement in explosive power in the experimental group compared to the control group. This improvement is attributed to the positive effects of the combined yogic and neuromuscular training regimen. The study emphasizes the relevance of integrating holistic approaches such as yoga and neuromuscular reeducation into athletic conditioning programs, particularly for young athletes involved in sports requiring dynamic explosive movements like handball.

Keywords: *Selective yogic package and Neuromuscular reeducation, Explosive power and 't' ratio.*



© 2024. Dr. P. Yoga., This is an open access article distributed under the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

1. INTRODUCTION

Sports have become a foundational pillar in the cultural, physical, and psychological development of modern society. No longer

confined to the realm of recreation or professional competition alone, sports now interlink with major social institutions—education, economics, law, mass communication,

and even international diplomacy—demonstrating their profound influence in shaping youth and communities (Alaguraja, K. et al., 2019). In this increasingly performance-oriented world, there is an urgent need to develop training methodologies that are not only effective but also sustainable, especially when targeting the formative years of athletic development. Physical education, in particular, plays a vital role in this regard by nurturing not only performance skills but also personal discipline and holistic growth (Alaguraja, K. et al., 2018).

Among the various methods available for improving physical and mental well-being, yoga stands out as a time-tested approach that aligns with both traditional and contemporary ideals. Yoga is universally accepted as beneficial across age groups and has been described as the silencing of the mind's activities, leading to a full realization of the Supreme Being's nature (Alaguraja, K. et al., 2017). It integrates the physical, psychological, and spiritual dimensions of the individual, making it especially valuable in the context of sports performance. The practice of asanas strengthens the muscles, improves posture, and enhances flexibility, while pranayama improves breathing efficiency and mental focus. Importantly, the mental engagement required during yoga ensures that the individual remains fully present, integrating the mind and body for maximum effectiveness (Alaguraja, K. et al., 2019).

Moreover, yoga offers flexibility in practice—it can begin with either postures or breathing exercises, depending on the practitioner's capacity and needs. This flexibility allows young athletes to adapt yoga routines to their unique training schedules. The modern pursuit of improved appearance, wellness, and longevity has also made yoga a popular tool among athletes, supported by scientific studies affirming its fitness benefits (Alaguraja, K. et al., 2019).

Alongside yoga, another important concept in physical rehabilitation and performance training is neuromuscular reeducation. It comprises therapeutic exercises aimed at restoring or enhancing the functional coordination between the nervous system and muscles. The process involves correcting movement patterns and improving balance,

kinesthetic awareness, proprioception, and overall motor coordination. These capabilities are essential in dynamic sports like handball, where rapid directional changes and explosive actions are frequent. Consciousness, while interacting with intellect and sensory input, can lead to fragmented awareness. Neuromuscular reeducation helps correct this by enhancing mind-muscle synchronization (Yoga, P. et al., 2019).

Thus, combining yogic practices with neuromuscular reeducation offers a holistic and strategic approach to improving athletic performance. Despite individual evidence supporting both these practices, little research has been conducted on their combined effect on performance metrics such as explosive power in adolescent athletes. This study seeks to fill that gap by evaluating whether a structured, six-week program combining selective yoga and neuromuscular reeducation could lead to measurable improvements in explosive power among youth handball players.

2. RESEARCH METHODOLOGY

2.1 Selection of subjects

The purpose of this study was to examine the effect of a selective yogic package and neuromuscular reeducation on explosive power among youth handball players. To achieve this objective, youth handball players aged between 14 and 18 years were selected at random as the subjects of the study.

2.2. Selection of variable

- **Independent variable:** Selective yogic package
- **Dependent variable:** Explosive power

3. EXPERIMENTAL DESIGN AND IMPLEMENTATION

The selected subjects were divided into two equal groups, with fifteen subjects in each group: the experimental group, which underwent a combined yogic package and neuromuscular reeducation program, and the control group. The experimental group participated in the combined program five days a week for six weeks. In contrast, the control group did not undergo any special training program and continued with their regular

physical activities as per their curriculum. Explosive power was selected as the criterion variable for the study. All subjects in both groups were tested on explosive power before and immediately after the training program, with explosive power measured using the standing broad jump method.

4. STATISTICAL TECHNIQUE

The 't' test was used to analysis the significant differences, if any, difference between the groups respectively.

5. LEVEL OF SIGNIFICANCE

The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

6. ANALYSIS OF THE DATA

The significance of the difference among the means of the experimental group was found out by pre-test. The data were analysed and dependent 't' test was used with 0.05 levels as confidence.

Table-1 :Analysis of t-ratio for the pre and post tests of experimental and control group onExplosive power(Scores in meters)

| Variables | Group | Standard Deviation | | Sd Error | |
|-----------------|--------------------|--------------------|-------|----------|--------|
| | | Pre | Post | Pre | Post |
| Explosive power | Control Group | 0.140 | 0.141 | 0.0361 | 0.0365 |
| | Experimental Group | 0.128 | 0.136 | 0.0331 | 0.0352 |

Table-2

| Variables | Group | Mean | | Degree of freedom | 't' ratio |
|-----------------|--------------------|------|------|-------------------|-----------|
| | | Pre | Post | | |
| Explosive power | Control Group | 1.89 | 1.88 | 14 | 0.53 |
| | Experimental Group | 1.86 | 1.96 | 14 | 7.44* |

*Significance at .05 level of confidence.

The Table-I and II shows that the mean values of pre-test and post-test of the control group on explosive power were 1.89 and 1.88 respectively. The obtained 't' ratio was 0.53, since the obtained 't' ratio was less than the required table value of 2.14 for the significant at 0.05 level with 14 degrees of freedom it was found to be statistically insignificant. The mean values of pre-test and post-test of the experimental group on explosive power were 1.86 and 1.96 respectively. The obtained 't' ratio was 7.44* since the obtained 't' ratio was

greater than the required table value of 2.14 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The result of the study showed that there was a significant difference between control group and experimental group in explosive power. It may be concluded from the result of the study that experimental group improved in explosive power due to six weeks of selective yogic package and neuromuscular reeducation training.

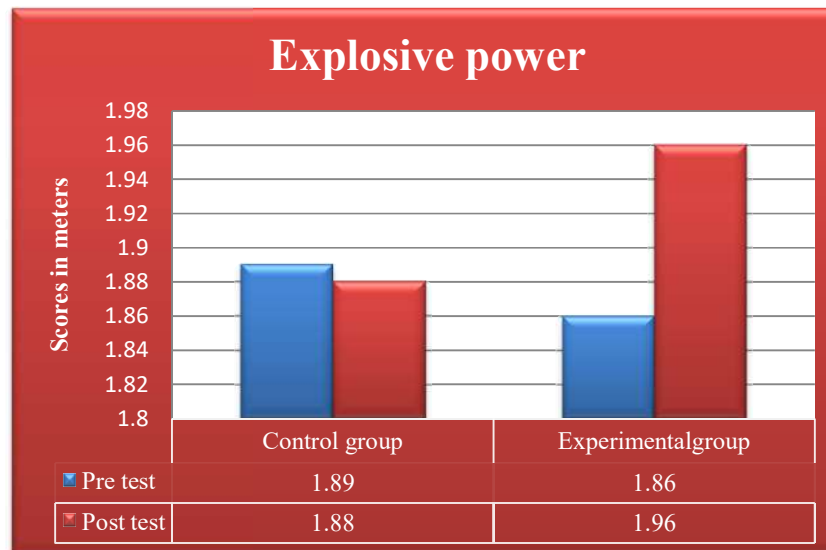


Fig-1: Bar Diagram Showing the Pre and Post Mean Values of Experimental and Control Group on Explosive power

7. DISCUSSIONS ON FINDINGS

The findings of this investigation clearly indicate that the experimental group, which underwent the selective yogic package combined with neuromuscular reeducation, showed statistically significant improvement in explosive power, as measured by the standing broad jump test. The control group, which did not participate in any special training program, showed negligible change in performance. This suggests that the improvement in explosive power in the experimental group can be attributed to the combined effect of the yogic and neuromuscular training.

The yogic component of the intervention likely enhanced flexibility, muscular control, and mental concentration. Regular practice of yoga improves postural alignment, strengthens stabilizing muscles, and supports functional strength development—factors that directly influence an athlete's ability to perform explosive actions such as jumping. When the mind is fully engaged with the body, as emphasized during yogic practice, the efficiency of muscular contraction and relaxation improves. This improved neuromuscular connection may have contributed significantly to the observed performance gains.

The neuromuscular reeducation component, in turn, likely improved proprioceptive abilities and refined muscle coordination. By systematically retraining

movement patterns and reinforcing correct motor function, this training helps in achieving biomechanical efficiency, which is crucial in high-intensity sports like handball. The improvement in balance, kinesthetic sense, and coordinated movement execution likely translated into more effective energy transfer during the broad jump, contributing to improved explosive power.

The statistical analysis further strengthens the interpretation of the findings. The 't' ratio of 7.44 in the experimental group is far greater than the critical value of 2.14 required for statistical significance at the 0.05 level with 14 degrees of freedom. Conversely, the control group's 't' ratio of 0.53 falls well below the threshold, confirming the lack of significant change. These results clearly establish that the observed improvement was not coincidental or due to regular growth or practice, but rather a direct consequence of the intervention applied.

Moreover, the mental benefits of yoga—such as reduced anxiety, improved self-confidence, and enhanced mental clarity—could have also supported athletes in optimizing their physical output. While the current study focused specifically on explosive power, it is worth noting that these mental attributes can influence overall athletic performance. Hence, the selective yogic and neuromuscular reeducation training may offer additional psychological

advantages that extend beyond physical performance.

8. CONCLUSION

On the basis of the results obtained through this study, it can be conclusively stated that the combination of a selective yogic package and neuromuscular reeducation has a statistically significant positive effect on the explosive power of youth handball players. The participants in the experimental group showed marked improvements in their standing broad jump scores after undergoing the six-week training program, whereas the control group showed no meaningful difference. This clearly demonstrates the effectiveness of the applied intervention in enhancing athletic performance in this specific domain.

The yogic training likely contributed to improvements in flexibility, joint mobility, muscular control, and mental focus—all of which are crucial for performing explosive movements. When these physical attributes are trained in conjunction with mental discipline, as promoted by yoga, athletes are more likely to achieve controlled and forceful movements in performance scenarios. The emphasis on conscious bodily awareness during yoga also promotes the development of motor precision.

Neuromuscular reeducation further complemented this by helping athletes refine their movement patterns, improve coordination, and strengthen proprioceptive abilities. These improvements translate into enhanced movement efficiency, which is key to better explosive power output. The combination of both methods created a balanced and integrated training system that addressed the physical, neurological, and psychological needs of the young athletes.

In conclusion, the study has demonstrated that the six-week integration of a selective yogic package and neuromuscular reeducation is highly effective in enhancing explosive power in youth handball players. The results support the incorporation of such holistic and scientifically grounded training methodologies into youth athletic development programs. These findings hold practical value for sports coaches, physical educators, and rehabilitation specialists who aim to cultivate

both high performance and long-term athlete well-being.

REFERENCE

- Rai, M., Yoga, P., Alaguraja, K., Selvakumar, K., & Das, S. (2020). [The power of yoga. International Journal of Advanced Science and Technology, 29\(3\), 6225–6229.](#)
- Das, S., Yoga, P., Alaguraja, K., Selvakumar, K., & Rai, M. (2020). [Consequence of yoga and rowing. International Journal of Advanced Science and Technology, 29\(3\), 7079–7084.](#)
- Alaguraja, K., & Yoga, P. (2020). [Combination of naturopathy and yoga on VO2 max among hypertensive patient. Indian Journal of Public Health Research & Development, 11\(4\), 131–134.](#)
- Alaguraja, K., & Yoga, P. (2020). [Effect of yoga therapy on BMI rate among class I obese patient. Indian Journal of Public Health Research & Development, 11\(5\), 143–146.](#)
- Rathinaraj, S. J., Yoga, P., Alaguraja, K., & Selvakumar, K. (2020). [Combination of walking practices and yogic practices on low density lipoprotein \(LDL\) among middle aged women. Indian Journal of Public Health Research & Development, 11\(6\), 362–365.](#)
- Rathinaraj, S. J., Yoga, P., Alaguraja, K., & Selvakumar, K. (2020). [Combination of walking practices and yogic practices on low density lipoprotein \(LDL\) among middle aged women. Indian Journal of Public Health Research & Development, 11\(6\), 1121–1124.](#)
- Alaguraja, K. (2019). [Analyze of combined asanas pranayama practices on psychosocial parameter among sports people. Indian Journal of Applied Research, 9\(10\), 73–74.](#)
- Alaguraja, K., & Yoga, P. (2017). [Influence of yogasana practice on flexibility among obese adolescent school boys. International Journal of Yoga, Physiotherapy and Physical Education, 2\(7\), 70–71.](#)
- Alaguraja, K., & Yoga, P. (2019). [Effect of yogic practice on resting pulse rate among school students. Indian Journal of Applied Research, 9\(7\), 43–44.](#)
- Yoga, P., Balamuralikrishnan, R., & Alaguraja, K. (2019). [Influence of cyclic meditation on selected physiological parameter. International Journal of Advanced Education and Research, 4\(1\), 17–18.](#)
- Alaguraja, K., & Yoga, P. (2018). [Effect of core stability training on dynamic strength among college male students. International Journal of Yogic, Human Movement and Sports Sciences, 3\(2\), 436–437.](#)

- Alaguraja, K., Yoga, P., Balamuralikrishnan, R., &Selvakumar, K. (2019).A scientific study on efficacy of yogic package on resting pulse rate among obese school students. *Journal of Information and Computational Science*, 9(8), 483–487.
- Alaguraja, K., & Yoga, P. (2019).Analyze of pranayama technique on physiological parameter among rural school students. *Journal of Information and Computational Science*, 9(8), 545–550.
- Alaguraja, K., Yoga, P., Rathinaraj, S. J., &Selvakumar, K. (2019).A study on yoga intervention on maximal oxygen uptake among stress patient. *Indian Journal of Applied Research*, 9(9), 38–39.
- Selvakumar, K., & Yoga, P. (2019). Influence of yogic practice on flexibility among college students. *Indian Journal of Applied Research*, 9(7), 45–46.
- Yogaraj, P., Ramaraj, P., &Elangovan, R. (2010).Effects of selected asanas on serum cholesterol and functions of adrenal gland in college women. *Asian Journal of Physical Education & Computer Science in Sports*, 2(1), 206–208.
- Yogaraj, P., Ramaraj, P., &Elangovan, R. (2010).Effect of selected yogic practices physical exercises on bio-chemical variables among college women students. *Asian Journal of Physical Education & Computer Science in Sports*, 3(1), 27–29.
- Yogaraj, P., &Elangovan, R. (2011).Effect of varied packages of yogic practice on selected bio-chemical variables of college men students. *International Journal of Physical Education, Sports Management and Yogic Sciences*, 1(1), 35–39.
- Alaguraja, K., & Yoga, P. (2020).Effect of yoga on flexibility and muscular endurance. *International Journal of Physical Education, Sports and Health*, 7(1), 138–139.
- Alaguraja, K., & Yoga, P. (2020).Impact of yoga therapy on BMI in obese adolescents. *International Journal of Physiology, Nutrition and Physical Education*, 5(2), 149–150.
- Alaguraja, K., & Yoga, P. (2020).Influence of yoga on stress and VO₂ max. *International Journal of Physiology, Nutrition and Physical Education*, 5(2), 151–152.
- Yoga, P. (2013).Effect of varied integrated modules of yogic practices on platelets count among women type II diabetic patients. *Asian Journal of Physical Education & Computer Science in Sports*, 9(1), 47–49.
- Yoga, P. (2014).Effect of varied integrated modules of yogic practices on white blood cell count among women type II diabetic patients. *International Journal of Physical Education, Sports Management and Yogic Sciences*, 4(1), 33–36.
- Yoga, P. (2014).Effect of varied integrated modules of yogic practices on red blood cell count among women of type II diabetic patients. *International Journal of Sports Technology, Management and Allied Sciences*, 3(1), 70–74.
- Yoga, P. (2014).Effect of varied packages of yogic practices on white blood cell count among college men students. *International Journal of Health, Physical Education & Computer Science in Sport*, 15(1), 47–49.
- Yoga, P. (2015).Influence of varied packages of yogic practices on cardio vascular endurance among college men students. *International Journal of Engineering Research & Sports Science*, 2(2), 33–34.
- Yoga, P. (2015).Efficacy of sectional breathing and nadisuddhi pranayama on red blood cell count among college men students. *International Journal of Information Research and Review*, 2(3), 537–539.
- Alaguraja, K., & Yoga, P. (2017).Influence of yogasana practice on flexibility among obese adolescent school boys. *International Journal of Yoga Physiotherapy and Physical Education*, 2(4), 70–71.
- Yoga, P. (2018).Effect of circuit training on respiratory frequency among male handball players. *International Journal of Health, Physical Education & Computer Science in Sports*, 29(2), 153–155.
- Balamuralikrishnan, R., & Yoga, P. (2018).Effect of varied intensity of aerobic training on self esteem. *International Journal of Physical Education, Sports and Health*, 5(2), 284–285.
- Balamuralikrishnan, R., & Yoga, P. (2018).Impact of varied intensities of aerobic training on resting heart rate. *International Journal of Physical Education, Sports and Health*, 5(2), 282–283.
- Balamuralikrishnan, R., & Yoga, P. (2018).Effect of aerobic training on muscular endurance among college men students. *International Journal of Physiology, Nutrition and Physical Education*, 3(2), 265–266.
- Rathinaraj, S. J., & Yoga, P. (2018).Effect of walking programme and yogic practices on blood pressure among hypertensive middle-aged men. *International Journal of Physiology, Nutrition and Physical Education*, 3(2), 295–296.

- Rathinaraj, S. J., & Yoga, P. (2018).Influence of walking practices on high-density lipoprotein (HDL) among middle-aged women. *International Journal of Physical Education, Sports and Health*, 5(2), 286–287.
- Rathinaraj, S. J., & Yoga, P. (2018).Impact of yogic practices on high-density lipoprotein (HDL) among middle-aged women. *International Journal of Physical Education, Sports and Health*, 5(2), 288–289.
- Rathinaraj, S. J., & Yoga, P. (2018).Influence of walking and yogic practices on blood pressure among hypertensive middle-aged men. *International Journal of Physical Education, Sports and Health*, 5(2), 290–291.
- Selvakumar, K., & Yoga, P. (2018).Effect of yogic practices on flexibility among college men. *International Journal of Physical Education, Sports and Health*, 5(2), 292–293.
- Selvakumar, K., & Yoga, P. (2018).Effect of yogic practices on anxiety among college men. *International Journal of Physical Education, Sports and Health*, 5(2), 294–295.
- Selvakumar, K., & Yoga, P. (2018).Impact of yogic practices on flexibility and anxiety among college men. *International Journal of Physical Education, Sports and Health*, 5(2), 296–297.
- Yoga, P., & Balamuralikrishnan, R. (2019).Influence of yogic practices and physical exercises on VO2 max. *International Journal of Physiology, Nutrition and Physical Education*, 4(1), 202–203.
- Yoga, P., & Selvakumar, K. (2019).Impact of yogic practices on flexibility among male students. *International Journal of Physical Education, Sports and Health*, 6(1), 34–35.
- Yoga, P., & Rathinaraj, S. J. (2019).Combined influence of walking and yoga on lipid profile among women. *International Journal of Physiology, Nutrition and Physical Education*, 4(1), 204–205.
- Rathinaraj, S. J., & Yoga, P. (2019).Impact of yogic practices on HDL among middle-aged women. *International Journal of Physiology, Nutrition and Physical Education*, 4(1), 206–207.
- Rathinaraj, S. J., & Yoga, P. (2019).Effect of walking on LDL among middle-aged women. *International Journal of Physiology, Nutrition and Physical Education*, 4(1), 208–209.
- Balamuralikrishnan, R., & Yoga, P. (2019).Aerobic training and its effect on cardiovascular endurance. *International Journal of Physical Education, Sports and Health*, 6(1), 36–37.
- Yoga, P., & Balamuralikrishnan, R. (2020).Impact of yogic practices on psychological parameters. *International Journal of Physical Education, Sports and Health*, 7(2), 114–115.
- Yoga, P., & Selvakumar, K. (2020).Flexibility enhancement through yoga practice. *International Journal of Physiology, Nutrition and Physical Education*, 5(2), 153–154.
- Rathinaraj, S. J., & Yoga, P. (2020).HDL changes due to yoga practice. *International Journal of Physiology, Nutrition and Physical Education*, 5(2), 155–156.

Cite this article as: Dr. P. Yoga., (2024). A Yogic Approach To Neuromuscular Reeducation For Improving Explosive Power In Young Handball Players. *International Journal of Emerging Knowledge Studies*. 3(8), pp. 521-527.
<https://doi.org/10.70333/ijeks-04-02-016>