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DEVELOPMENT OF SELECTED STRENGTH VARIABLES THROUGH INDIAN CLUB AND KARLAKATTAI EXERCISES AMONG STUDENTS WITH HEARING IMPAIRMENT

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ABSTRACT

The study aimed to examine the impact of Indian Club and Karlakattai exercises on selected strength variables among students with hearing impairment. A total of 20 participants from Sankara College, Coimbatore, aged 17–21 years, were randomly assigned to an experimental group (n=10) and a control group (n=10). The experimental group underwent an eight-week training program comprising Indian Club and Karlakattai exercises performed twice a week for 60 minutes per session, while the control group did not receive any intervention. Pre- and post-tests were conducted to measure upper body strength (maximum push-ups), core strength (plank test), and lower body strength (wall squat test). The data were analyzed using dependent 't' tests. Results indicated significant improvements in the experimental group for upper body strength (t=12.65), core strength (t=6.84), and lower body strength (t=5.70), whereas no significant changes were observed in the control group. The findings suggest that Indian Club and Karlakattai exercises are effective, culturally relevant, and inclusive methods for enhancing strength and overall physical fitness among students with hearing impairment.

KEYWORDS: *Indian Club Exercises, Karlakattai Training, Hearing Impairment, Core Strength, Upper Body Strength, Lower Body Strength, Inclusive Physical Education.*

INTRODUCTION

Physical fitness plays a vital role in the holistic development of every individual, including those with disabilities. Among various components of fitness, core strength is essential as it contributes to balance, stability, posture and efficient movement patterns. For students with hearing impairment, the development of physical fitness—particularly core strength—assumes special importance. Since they rely more on visual and kinesthetic cues rather than auditory information, enhancing physical coordination and body control can significantly improve their confidence, communication through body language, and overall functional independence.

Traditional Indian physical culture offers a rich repository of exercises and tools that can be effectively utilized to develop strength and coordination. Two such traditional practices—Indian club exercises and Karlakattai training—have been used for centuries by wrestlers and warriors to build muscular endurance, flexibility, and core stability. Indian clubs are light, elongated wooden implements swung rhythmically to enhance shoulder mobility, trunk strength, and coordination. Similarly, the Karlakattai—a traditional South Indian wooden club—involves a variety of swinging, rotational, and stance-based movements that engage the entire body, particularly the core muscles. These exercises not only promote strength but also encourage concentration, rhythm, and body awareness **(McDougall, 2022; Om Shiva Yoga, 2023).**

The integration of Indian club and Karlakattai exercises into physical education programs for students with hearing impairment can serve as an innovative, culturally relevant, and inclusive approach. These exercises can be easily demonstrated visually, require minimal verbal instruction, and can be performed safely with proper supervision. Moreover, the rhythmic and patterned movements help in developing motor planning, balance, and coordination, which in turn contribute to improved physical performance and daily functional activities.

Therefore, this study aims to explore the development of core strength through Indian club exercises and Karlakattai training among students with hearing impairment. By implementing these traditional training methods, the study seeks to highlight the effectiveness of indigenous physical practices in enhancing physical fitness parameters and promoting inclusive physical education. This approach not only contributes to the physical well-being of students but also helps preserve and promote India's rich heritage of traditional physical culture.

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METHODS

Selection of Subjects

To achieve the purpose of the study N=20 hearing impairment students Sankara college of Coimbatore district. The selected subjects were divided into two groups such as experimental group (10) and control group (10).Subject'sageranged from 17 to 21 years. The experimental group was treated with Karlakattai exercise for two days per week, for the period of eight weeks and each training session was 60 minutes in the evening and no training was given to the control group.

Criterion Measures and Tests

S.NO	VARIABLES	TESTS	UNITOF MEASUREMENTS
1	Upper body strength	Maximum Push – ups	Counts
2	Core strength	Plank Test	Seconds
3	Lower body strength	Wall squat test	Seconds

Training Programme

The first phase (Weeks I & II) focuses on building foundational strength, coordination, and core stability. Each session begins with a 10minute warmup to prepare the body for movement and prevent injury. Participants perform basic Indian Club front swings, Karlakattai shoulder rotations, seated club circles, standing trunk twists, static plank holds, and Indian Club side swings. The exercises are performed for 2 sets of 10–12 repetitions with 30 seconds of rest between sets and 1 minute between exercises. This phase emphasizes proper form, slow and controlled movements, and establishing neuromuscular awareness, forming a strong base for more complex exercises.

In the second phase (Weeks III & IV), the training volume and intensity increase to enhance muscular endurance, dynamic stability, and trunk rotation strength. Exercises include Karlakattai forward circles, seated club overhead presses, side lying planks, Indian Club alternating swings, Karlakattai full rotational swings, and Indian Club cross swings. Repetitions are slightly increased, and sets are increased to 3, maintaining 30second rests between sets and 1 minute between exercises. This phase focuses on integrating multiplanar movements, improving coordination, and preparing participants for higher intensity and compound exercises.

The third phase (Weeks V & VI) introduces advanced movements and combination exercises to challenge strength, balance, and core control further. Participants perform Karlakattai around the body circles, seated twists with a light club, side plank with club raise, Indian Club highspeed swings, Karlakattai squat plus front swing combo, and Russian twists with a club. The sets are increased to 4 with 10–12 repetitions per exercise, maintaining consistent rest intervals. This phase emphasizes dynamic stability, rotational strength, and controlled power generation, promoting higher level motor skills and functional core activation.

In the fourth and final phase (Weeks VII & VIII), the program targets advanced dynamic core and full body coordination through high intensity and continuous movement circuits. Exercises include dynamic plank to push up, Indian Club backward circles, continuous Indian Club swing circuits, Karlakattai dynamic circuits, and side plank with reach through movements. Repetitions range from 12–15 with 4 sets, keeping rest intervals consistent. This phase aims to maximize endurance, enhance neuromuscular efficiency, and integrate complex motor patterns, enabling participants—particularly students with hearing impairment—to achieve improved core strength, balance, and overall functional fitness.

Statistical Technique

As the purpose of the study was find out the impacts of Indian Club and Indian Club and Karalakattai training on selected strength parameters among student with hearing impairment at the collected data prior to treatment and after of treatment period were tested using statistically dependent 't' test. It was considered as appropriate for this study.

RESULTS

Table 1: Computation of 't' ratio between pre and post-test means of Experimental group on Selected Strength Parameters

Experimental Group					
Strength Variables	**Pre/Post test**	**Mean**	**Std. Deviation**	**Std Error Mean**	**'t' Ratio**
Upper Body Strength	Pre-Test	18.80	3.70	2.70	**12.65***
	Post-Test	21.50	3.59		
Core Strength	Pre-Test	78.30	10.43	12.30	**6.84***
	Post-Test	90.60	11.76		
Lower Body Strength	Pre-Test	81.30	7.80	6.70	**5.70***
	Post-Test	88.00	10.05		

*Significant at 0.05 level of confidence (2.26), 1 & 10.

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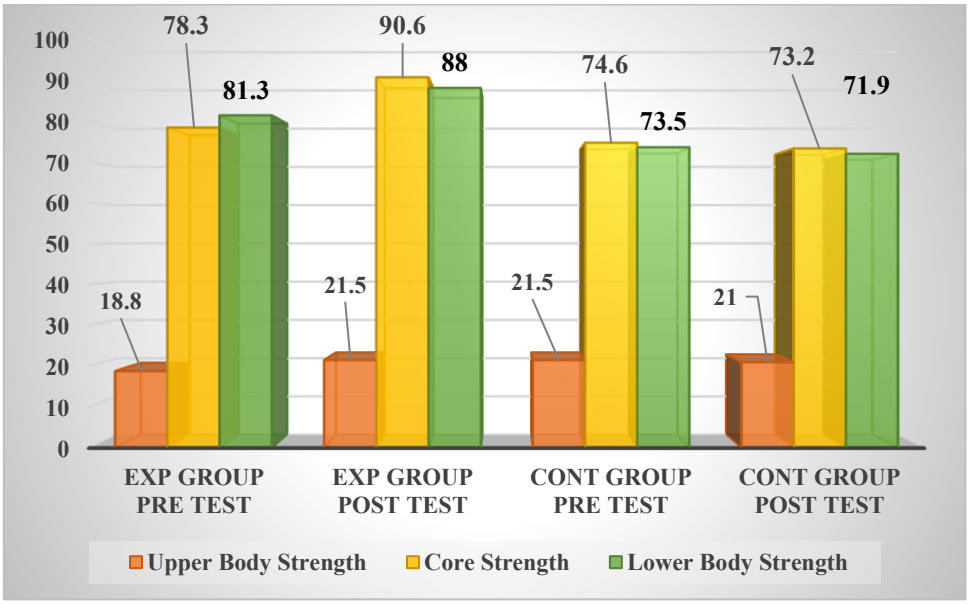
Table 1 reveals that the Computation of 't' ratio between pre and post-test means of experimental group on selected fitness parameters. The 't' ratio on upper body strength, core strength and lower body strength is 12.65, 6.84 and 5.70 respectively. The required table value was 2.26 for the degrees of freedom 10 at 0.05 level of significance. Since the obtained 't' ratio values were greater than the table value, it was found statistically significant.

Table 2: Computation of 't' ratio between pre and post-test means of Control group on Selected Strength Parameters

Control Group					
Strength Variables	**Pre/Post test**	**Mean**	**Std. Deviation**	**Std Error Mean**	**'t' Ratio**
Upper Body Strength	Pre-Test	21.50	3.92	1.50	1.46
	Post-Test	21.00	3.68		
Core Strength	Pre-Test	74.60	6.46	1.40	1.83
	Post-Test	73.20	4.73		
Lower Body Strength	Pre-Test	73.50	2.12	1.60	1.71
	Post-Test	71.90	2.96		

*Significant at 0.05 level of confidence (2.26), 1 & 10.

Table 2 reveals that the Computation of 't' ratio between pre and post-test means of Control group on selected fitness parameters. The 't' ratio on upper body strength, core strength and lower body strength is 1.46, 1.83 and 1.71 respectively. The required table value was 2.26 for the degrees of freedom 10 at 0.05 level of significance. Since the obtained 't' ratio values were lower than the table value, it was found statistically not significant.



DISCUSSION OF FINDINGS

The results of the study indicated that the selected strength parameters like upper body strength, core strength and lower body strength were improved significantly after undergoing impacts of Indian Club and Karalakattai training. The changes in the selected parameters were attributed the proper planning, preparation and execution of the training package given to the players.

The impacts of Indian Club and Karalakattai training is a fantastic training which has been found to be beneficial for the hearing impairement. To study the Indian Club and Indian Club and Karalakattai training on selected strength of men hearing impairment at college level, it was tested under, to differentiate between Indian Club and Karalakattai training group and control group. The Indian Club and Indian Club and Karalakattai training includes on upper body strength, core strength and lower body strength. The Strength training exercises are namely, Indian Club Basic Front Swings, Karlakattai Shoulder Rotations , Seated Club Circles, Standing Trunk Twists, Indian Club Side Swings, Karlakattai Forward Circles, Club Overhead Press (Seated), Side-Lying Plank and etc. It also improves the raiding ability, game tactics, anaerobic capacity, quickness, eye hand coordination and other than some physical fitness components are namely speed, agility, and power. The obtained result proved positively the loop band training group significantly improved. The result of the present study showed that the impacts of Indian Club and Indian Club and Karalakattai training has significant improvement on college level men hearing impairments. The following studies was revealed that Karlakattai refers to an ancient Tamil martial and physical training system using heavy wooden clubs. These exercises focus on enhancing upper body strength, grip, endurance, and core stability, while preserving indigenous traditions. **(Sundar, 2019). Indian clubs** are a form of exercise equipment resembling elongated bowling pins, traditionally used for developing strength, flexibility, and coordination,

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particularly in the shoulders, arms, and upper body. The practice originated in **ancient India** as part of *malla-yuddha* (traditional wrestling training) and was later adopted by British soldiers in the 19th century as a form of calisthenics.

CONCLUSION

The study concludes that the implementation of Indian Club and Karlakattai exercises significantly improves upper body, core, and lower body strength among students with hearing impairment. The structured eight-week training program effectively enhanced muscular endurance, coordination, and functional stability. These traditional exercises provide an inclusive, culturally relevant, and safe method for promoting physical fitness, balance, and body awareness in hearing-impaired students. The findings support the integration of indigenous physical practices into modern physical education programs, contributing to holistic development and functional independence in individuals with hearing impairments.

REFERENCE

1. *McDougall, P. (2022). Circular strength training: Indian clubs and maces. Retrieved from https://www.philmcdougall.com/blog/circular-strength-training Phil McDougall Personal Training*
2. *Om Shiva Yoga. (2023). Karlakattai – Singapore. Retrieved from https://www.omshivayoga.com/karlakattai.*
3. *Abdullah, N. M., Tumijan, W., Parnabas, V., Shapie, M. N. M., Hamid, N. A., Mohamed, M., & Ahmad, A. (2015, November). Predicting the physical fitness level among students with hearing impairment. In Proceedings of the 2nd International Colloquium on Sports Science, Exercise, Engineering and Technology 2015 (ICoSSEET 2015) (pp. 67-77). Singapore: Springer Singapore.*
4. *Arabacı, R. (2007). The effect of participating into sport on the fitness level of youths with hearing impairment. International Journal of Human Sciences, 4(2).*
5. *Biçer, M. (2021). The effect of an eight-week strength training program supported with functional sports equipment on male volleyball players' anaerobic and aerobic power. Science & Sports, 36(2), 137-e1.*
6. *Bosmana, A. J., & Smoorenburg, G. F. (1995). Intelligibility of Dutch CVC syllables and sentences for listeners with normal hearing and with three types of hearing impairment. Audiology, 34(5), 260-284.*
7. *Boyaci, A., & Tutar, M. (2018). The effect of the quad-core training on core muscle strength and endurance. International Journal of Sports Science, 8(2), 50-54.*
8. *Caglar, O., Uludag, A., Sepetcı, T., & Calıskan, E. (2013). Evaluation of physical fitness parameters of hearing impaired adolescents who are active and non-active in sports. Turkish Journal of Sport and Exercise, 15(2), 38-44.*
9. *Channell, B. T., & Barfield, J. P. (2008). Effect of Olympic and traditional resistance training on vertical jump improvement in high school boys. The Journal of Strength & Conditioning Research, 22(5), 1522-1527.*
10. *Chen, J., Baer, T., & Moore, B. C. (2013). Effect of spectral change enhancement for the hearing impaired using parameter values selected with a genetic algorithm. The Journal of the Acoustical Society of America, 133(5), 2910-2920.*
11. *Dinç, N., & Ergin, E. (2019). The Effect of 8-Week Core Training on Balance, Agility and Explosive Force Performance. Universal journal of educational research, 7(2), 550-555.*
12. *Eskiyecek, C., Gül, M., Uludağ, B., & Gül, K. E. M. A. L. (2020). The effect of 8-week core exercises applied to 10-12 age male swimmers on swimming performance. International Journal Of Applied Exercise Physiology (IJAEP), 9(3).*
13. *Huang, J., Yang, J., Haegele, J. A., Wang, L., Chen, S., & Li, C. (2023). Feasibility and reliability of health-related physical fitness tests in children and adolescents with hearing impairment. Children, 10(2), 353.*
14. *Hung, K. C., Chung, H. W., Yu, C. C. W., Lai, H. C., & Sun, F. H. (2019). Effects of 8-week core training on core endurance and running economy. PloS one, 14(3), e0213158.*
15. *Hsu, S. L., Oda, H., Shirahata, S., Watanabe, M., & Sasaki, M. (2018). Effects of core strength training on core stability. Journal of physical therapy science, 30(8), 1014-1018.*
16. *Kim, Y. H., Kim, S. H., Kim, T., & Ma, R. (2024). Health-related Physical Fitness, Blood Pressure, and Body Mass Index among People with Intellectual Disability, Visual Impairment, and Hearing Impairment. Exercise Science, 33(1), 93-105.*
17. *Martínez-López, E. J., Manuel, J., Suárez-Manzano, S., & Ruiz-Ariza, A. (2018). Analysis of the effect size of overweight in muscular strength tests among adolescents: Reference values according to sex, age, and body mass index. The Journal of Strength & Conditioning Research, 32(5), 1404-1414.*
18. *Martinez-Amezcua, P., Kuo, P. L., Reed, N. S., Simonsick, E. M., Agrawal, Y., Lin, F. R., ... & Schrack, J. A. (2021). Association of hearing impairment with higher-level physical functioning and walking endurance: results from the Baltimore Longitudinal Study of Aging. The Journals of Gerontology: Series A, 76(10), e290-e298.*
19. *McDonald, A. C., Savoie, S. M., Mulla, D. M., & Keir, P. J. (2018). Dynamic and static shoulder strength relationship and predictive model. Applied Ergonomics, 67, 162-169.*
20. *Rajkumar, N. J., & Sreejith, R. (2021). Consequence of Core Strength Training on Explosive Power and Abdominal Strength among National Level Injured Kabaddi Players of South India. Solid State Technology, 64(2), 6981-6989.*
21. *Söyler, M., & Küçük, H. The Relationships with Maximal Aerobic Speed, Maximal Oxygen Uptake and Isokinetic Strength in Hearing Impaired Men's Handball Players. International Journal of Disabilities Sports and Health Sciences, 7(2), 415-425.*
22. *Trikha, S. (2017). Relationship between selected strength and coordinative ability variables of school level basketball players.*
23. *Vallimurugan, V., & Senthil Kumaran, S. (2023). Effects of yoga on physiological parameters among school level hearing impairment students. International Journal of Childhood and Development Disorders, 4(1), 6-9.*
24. *Yin, L., Tang, C., & Tao, X. (2018). Criterion-Related Validity of a Simple Muscle Strength Test to Assess Whole Body Muscle Strength in Chinese Children Aged 10 to 12 Years. Biomed Research International, 2018(1), 2802803.*

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EPRA International Journal of Research and Development (IJRD)
Volume: 10 | Issue: 11 | November 2025 - Peer Reviewed Journal

25. *Yüksel, O., & Akın, S. (2017). The effects of 8 weeks core training on dynamic balance of elite level badminton players. European Journal of Physical Education and Sport Science.*