INSPIREE: Indonesian Sport Innovation Review
ISSN. 2746-6965 (Online), 2774-2520 (Print) | Volume 08 Issue 01 (2027)
DOI: 10.53905/inspire.271-238
TYPE: Original Research Articles

Check for updates

OPEN ACCESS

EDITED BY
Assoc. Prof. Dr. Herli Pardilla
Universitas Muhammadiyah Sumatera Utara, Indonesia.

*CORRESPONDENCE
Zaiful Amran
zaifulamran@student.uir.ac.id

RECEIVED: June 26, 2026
ACCEPTED: November 03, 2026
PUBLISHED: January 27, 2027

COPYRIGHT © 2027 (Author)
Zaiful Amran
Raffly Henjilito

This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Effects of a Four-Week Progressive Plyometric Programme on Flying Shoot Performance in Female University Handball Athletes: A Quasi-Experimental Controlled Pretest–Posttest Study

Zaiful Amran[1]*, Raffly Henjilito[1]

[1]Department of Physical Education, Universitas Islam Riau, Indonesia.

ABSTRACT

Background & objective: Plyometric training is widely used to improve explosive performance in handball, but evidence remains limited regarding its transfer to sport-specific flying shoot performance in female university athletes. This study examined whether a short-duration progressive plyometric programme could improve flying shoot performance compared with a control condition.

Materials & Methods: A quasi-experimental, non-randomized controlled pretest–posttest design was used involving 68 female university handball athletes, with 34 participants in the experimental group and 34 in the control group. The experimental group completed a four-week progressive plyometric programme consisting of 12 sessions incorporating hurdle jumps, box jumps, single-leg hops, and medicine-ball throws, while the control group did not receive the additional plyometric intervention. Flying shoot performance was assessed using a standardized three-attempt accuracy test, with scores summed across attempts. The primary analysis used analysis of covariance (ANCOVA), with posttest score as the dependent variable, group as the fixed factor, and pretest score as the covariate. Assumption checks included Shapiro–Wilk and Levene tests, and non-parametric sensitivity analyses were performed.

Results: Baseline flying shoot performance was comparable between groups (5.03 ± 1.14 vs 5.12 ± 1.09; $p = 0.746$). Posttest scores increased to 7.94 ± 1.10 in the experimental group and 5.26 ± 1.02 in the control group. The adjusted between-group difference was 2.753 points (95% CI 2.548–2.959), $F(1,65) = 717.125$, $p < 0.001$, partial $\eta^2 = 0.917$. Sensitivity analyses confirmed the direction of the primary finding.

Conclusions: A four-week progressive plyometric programme was associated with substantially greater improvement in flying shoot performance among female university handball athletes. These findings extend international evidence by supporting transfer from combined upper- and lower-body plyometric training to a sport-specific technical outcome, although generalization should remain cautious.

Keywords
handball; plyometric exercise; athletic performance; female athletes; shooting accuracy; university athletes

CITATION APA STYLE 7:
Amran, Z., & Henjilito, R. (2027). Effects of a Four-Week Progressive Plyometric Programme on Flying Shoot Performance in Female University Handball Athletes: A Quasi-Experimental Controlled Pretest–Posttest Study. *INSPIREE: Indonesian Sport Innovation Review*. https://doi.org/10.53905/inspiree.271-238

INSPIREE IN PROCESS

INTRODUCTION

Global and Theoretical Context
Critical Review of Existing Evidence
Research Gap, Novelty, and International Contribution
Objectives and Hypotheses

MATERIALS AND METHODS

Study Design
Participants
Group Allocation
Flying Shoot Performance Assessment
Plyometric Training Intervention

The experimental group completed a four-week progressive plyometric training programme consisting of 12 supervised sessions performed three times per week on non-consecutive days. The programme consisted of three progressive phases: adaptation, development, and peak. Four principal exercises were implemented throughout the intervention: 1) hurdle jumps; 2) box jumps; 3) single-leg hops; and 4) medicine-ball throws. Training volume and exercise demand were progressively increased across the intervention period.

Table 1. Structure of the progressive plyometric training programme

Phase	Sessions	Exercises	Sets	Repetitions	Rest between sets	Primary training emphasis

Adaptation	1–4	Hurdle jump, box jump, single-leg hop, medicine-ball throw	3	6 / 6 / 5 / 8	60–90 s	Familiarisation and low-intensity plyometric exposure
Development	5–8	Hurdle jump, box jump, single-leg hop, medicine-ball throw	4	6 / 6 / 6 / 8	60 s	Progressive overload and moderate training demand
Peak	9–12	Hurdle jump, box jump, single-leg hop, medicine-ball throw	4	8 / 8 / 6 / 10	45–60 s	High explosive-output demand

Each session began with a standardized 10–15-minute warm-up and ended with an approximately 10-minute cool-down. Attendance was recorded throughout the intervention. Participants attending at least 80% of the planned sessions were classified as adherent. All 34 experimental-group participants met this criterion.

Control Condition

Intervention Fidelity, Adherence, and Safety Monitoring

Outcome Measures

Statistical Analysis

Ethical Considerations

The study was conducted in accordance with ethical principles for research involving human participants and with the Declaration of Helsinki. Ethical approval was obtained from the Lembaga Penelitian dan Pengabdian FKIP Universitas Islam Riau (Approval No. UIR/LPPM-FKIP-PE/26/01-3419). Before participation, all participants received information regarding the study objectives, procedures, potential risks and benefits, voluntary nature of participation, confidentiality, and their right to withdraw without penalty. Written informed consent was obtained before data collection. Participant information was anonymized for analysis and reporting. Access to identifiable research information was restricted to the research team. No financial inducement was provided for participation.

RESULTS

Participant Flow and Baseline Characteristics

Assumption Testing

Normality

Normality was assessed separately for pretest, posttest, and change scores using the Shapiro–Wilk test. Statistically significant deviations from normality were observed in all distributions.

Table 3. Shapiro–Wilk normality test

Variable	Group	W	*p* value	Interpretation
Pretest	Experimental	0.920	0.016	Non-normal
Pretest	Control	0.919	0.015	Non-normal
Posttest	Experimental	0.920	0.016	Non-normal
Posttest	Control	0.913	0.010	Non-normal
Change score	Experimental	0.510	<0.001	Non-normal
Change score	Control	0.672	<0.001	Non-normal

The greatest departures from normality were observed for the change scores, reflecting the highly concentrated changes within each group.

Homogeneity of Variance

Primary Outcome

Flying shoot performance was the primary outcome. At posttest, the experimental group achieved a mean score of 7.94 ± 1.10 points, compared with 5.26 ± 1.02 points in the control group. The experimental group demonstrated a mean improvement of 2.91 ± 0.38 points, whereas the control group improved by 0.15 ± 0.50 points. The unadjusted between-group difference in change scores was 2.765 points (95% CI 2.550–2.980), $t(66) = 25.685$, $p < 0.001$. The standardized between-group difference in change scores corresponded to Hedges' $g = 6.16$. The primary analysis used ANCOVA, with posttest flying shoot score as the dependent variable, group as the fixed factor, and baseline flying shoot score as the covariate. After adjustment for baseline performance, the estimated posttest mean was 7.98 points in the experimental group and 5.23 points in the control group. The adjusted between-group difference was 2.753 points (95% CI 2.548–2.959). A significant group effect was observed, $F(1,65) = 717.125$, $p < 0.001$, partial $\eta^2 = 0.917$.

Table 5. Primary flying shoot outcome by study group

Outcome	Experimental (n = 34)	Control (n = 34)	Between-group estimate	95% CI	Effect size	*p* value
Pretest, mean ± SD	5.03 ± 1.14	5.12 ± 1.09	−0.09	—	—	0.746
Posttest, mean ± SD	7.94 ± 1.10	5.26 ± 1.02	—	—	—	—
Change score, mean ± SD	2.91 ± 0.38	0.15 ± 0.50	2.765	2.550–2.980	Hedges' $g = 6.16$	<0.001
Adjusted posttest mean[1]	7.98	5.23	2.753	2.548–2.959	partial $\eta^2 = 0.917$	<0.001

Adjusted using ANCOVA with posttest flying shoot score as the dependent variable, group as the fixed factor, and pretest score as the covariate.

INSPIREE INPRESS

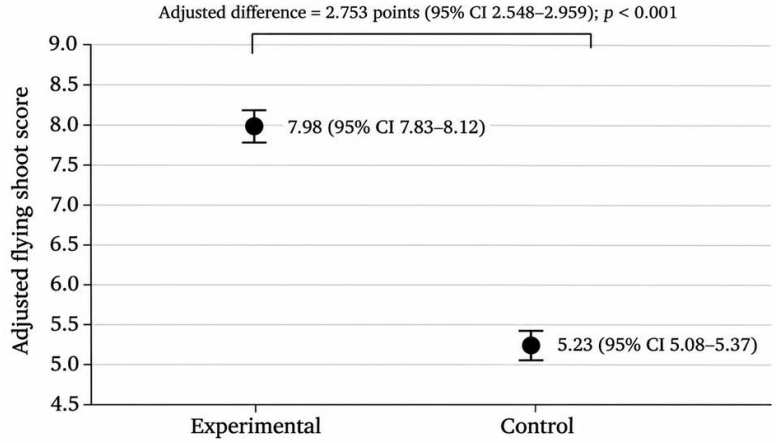


Figure 2. Baseline-adjusted posttest flying shoot scores by study group. Points represent ANCOVA-estimated marginal means and error bars represent 95% confidence intervals. The model adjusted posttest performance for baseline flying shoot score.

Supplementary Within-Group Analyses

Within-group comparisons were conducted as supplementary analyses. The experimental group increased from 5.03 ± 1.14 at pretest to 7.94 ± 1.10 at posttest. The mean increase was 2.91 points (95% CI 2.78–3.04), paired $t(33) = 44.821$, $p < 0.001$. The control group changed from 5.12 ± 1.09 to 5.26 ± 1.02 points. The mean increase was 0.15 points (95% CI −0.03 to 0.32), paired $t(33) = 1.713$, $p = 0.096$.

Table 6. Supplementary within-group analyses

Group	Pretest, mean ± SD	Posttest, mean ± SD	Mean change	95% CI	*t* (df)	*p* value
Experimental	5.03 ± 1.14	7.94 ± 1.10	2.91	2.78–3.04	44.821 (33)	<0.001
Control	5.12 ± 1.09	5.26 ± 1.02	0.15	−0.03–0.32	1.713 (33)	0.096

Sensitivity Analyses

Intervention Fidelity, Adherence, and Safety

The intervention was implemented with complete participant retention and full adherence to the predefined attendance criterion among experimental-group participants. Outcome completeness was 100% in both groups, with no loss to posttest assessment and no missing primary-outcome data. No intervention discontinuations, adverse events, or serious adverse events were recorded in either group during the study period. These findings indicate that the intervention protocol was feasible to complete within the study setting and was not associated with any recorded safety events during the four-week intervention period.

DISCUSSION

Principal Findings

Comparison with International Evidence

Theoretical, Methodological, and Practical Implications

Strengths and Limitations

Future Research

Future work should establish the reliability and responsiveness of the flying shoot scoring instrument in larger samples and consider a greater number of trials or technology-assisted measures to reduce discreteness and measurement error. Multi-method assessment combining accuracy, ball velocity, and jump characteristics would provide a more complete representation of performance. Finally, implementation and cost-effectiveness studies are warranted. Plyometric programmes are relatively simple to deliver, but their real-world value depends on coach training, equipment availability, scheduling, athlete adherence, injury surveillance, and compatibility with existing technical training. Pragmatic multicentre trials could therefore examine not only whether the intervention works under controlled conditions, but also whether it can be implemented consistently, safely, and economically within university handball programmes.

CONCLUSION

A four-week progressive plyometric training programme was associated with substantially greater improvement in flying shoot performance among female university handball athletes compared with the control condition. The baseline-adjusted analysis supported a clear between-group difference, and the direction of the finding was consistent across supplementary and sensitivity analyses. These results extend the existing handball literature by showing that a short-duration programme combining lower- and upper-body plyometric exercises may transfer to a sport-specific technical outcome rather than only to isolated physical-performance measures. The findings are relevant to university-level handball programmes internationally, particularly in settings where structured explosive-power training is limited and practical, low-cost conditioning strategies are needed. However, the results should be generalized cautiously because the study involved a single university-level female athlete population, a relatively short intervention period, a discrete performance measure, non-randomized group allocation, and no longer-term follow-up. Replication in larger, multicentre, and preferably randomized controlled studies is required before broader causal or population-level conclusions are made.

INSPIREE IN PRESS

DECLARATIONS

Ethical Approval
Consent to Participate
Consent for Publication
Author Contributions (CRediT)
Funding
Conflict of Interest
Data Availability
Acknowledgements
Generative AI Disclosure

References

Alkasasbeh, W. J. (2023). Evaluation of Plyometric Exercise, Strength Training on Physical Capabilities. *International Journal of Human Movement and Sports Sciences*, *11*(1), 37–43. https://doi.org/10.13189/saj.2023.110105

Aloui, G., Hermassi, S., Hammami, M., Cherni, Y., Gaamouri, N., Shephard, R. J., Tillaar, R. van den, & Chelly, M. S. (2020). Effects of Elastic Band Based Plyometric Exercise on Explosive Muscular Performance and Change of Direction Abilities of Male Team Handball Players. *Frontiers in Physiology*, *11*, 604983. https://doi.org/10.3389/fphys.2020.604983

Aloui, G., Hermassi, S., Hayes, L. D., Shephard, R. J., Chelly, M. S., & Schwesig, R. (2021). Effects of Elastic Band Plyometric Training on Physical Performance of Team Handball Players. *Applied Sciences*, *11*(3), 1309. https://doi.org/10.3390/app11031309

Balaji, E., Murugavel, K., Rajkumar, M., Logeswaran, S., Vijayasankar, V., & Devaraj, C. (2024). Investigating the Effectiveness of Six-Week Plyometric Training Intervention on Speed-Strength Fitness Abilities of Male Team Handball Players. *Слобожанський Науково-Спортивний Вісник*, *28*(1), 44–50. https://doi.org/10.15391/snsv.2024-1.006

Bates, N. A., Ford, K. R., Myer, G. D., & Hewett, T. E. (2013). Impact differences in ground reaction force and center of mass between the first and second landing phases of a drop vertical jump and their implications for injury risk assessment. *Journal of Biomechanics*, *46*(7), 1237–1241. https://doi.org/10.1016/j.jbiomech.2013.02.024

Belčić, I., Očić, M., Dukarić, V., Knjaz, D., & Zoretić, D. (2023). Effects of One-Step and Three-Step Run-Up on Kinematic Parameters and the Efficiency of Jump Shot in Handball. *Applied Sciences*, *13*(6), 3811. https://doi.org/10.3390/app13063811

Benyahia, O., Sefir, H., Cheriet, M. E. H. E. M., Benaissa, R., HADDI, A., Beldjouheur, F., Khellafi, A., & Bensaada, M. B. (2026). The Effect of Plyometric Training on Developing Explosive Power Specific to Jump Shooting in Handball – An Experimental Study. *Journal of Ecohumanism*, *4*(4). https://doi.org/10.62754/joe.v4i4.7196

Boltabayev, S. (2025). Differentiation of the jump shot technique in handball players of various qualification levels based on kinematic indicators. *Trends in Physical Education and Sport*, *1*(2), 24–28. https://doi.org/10.31489/3081-0531/2025-1-2/24-28

Burhaeın, E., Ibrahim, B. K., & Pavlović, R. (2020). The Relationship of Limb Muscle Power, Balance, and Coordination with Instep Shooting Ability: A Correlation Study in Under-18 Football Athletes. *International Journal of Human Movement and Sports Sciences*, *8*(5), 265–270. https://doi.org/10.13189/saj.2020.080515

Cao, S., Wang, Z., Guo, J., Soh, K. G., Sun, H., & Liu, J. (2024). The effects of plyometric training on physical fitness and skill-related performance in female basketball players: a systematic review and meta-analysis. *Frontiers in Physiology*, *15*, 1386788. https://doi.org/10.3389/fphys.2024.1386788

Carvalho, A., Mourão, P. R., & Abade, E. (2014). Effects of Strength Training Combined with Specific Plyometric exercises on body composition, vertical jump height and lower limb strength development in elite male handball players: a case study. *Journal of Human Kinetics*, *41*(1), 125–132. https://doi.org/10.2478/hukin-2014-0040

Cherif, M., Said, M. A., Chaatani, S., Nejlaoui, O., Gomri, D., & Aouidet, A. (2012). The Effect of a Combined High-Intensity Plyometric and Speed Training Program on the Running and Jumping Ability of Male Handball Players. *Asian Journal of Sports Medicine*, *3*(1), 21–28. https://doi.org/10.5812/asjsm.34721

Deng, N., Soh, K. G., Abdullah, B., Huang, D., Xiao, W., & Liu, H. (2023). Effects of plyometric training on technical skill performance among athletes: A systematic review and meta-analysis. *PubMed Central*, *18*(7). https://doi.org/10.1371/journal.pone.0288340

Deng, N., Soh, K. G., Abdullah, B., Huang, D., Xu, F., Bashir, M., & Zhang, D. (2024). Effects of plyometric training on health-related physical fitness in untrained participants: a systematic review and meta-analysis. *Scientific Reports*, *14*(1), 11272. https://doi.org/10.1038/s41598-024-61905-7

Feng, Z., Xie, Z., Huang, Z., Huang, W., Mi, X., & Li, G. (2026). Lower-limb coordination adaptations to shooting distance in basketball: an exploratory angular velocity-based vector coding study. *Frontiers in Bioengineering and Biotechnology*, *13*, 1730129. https://doi.org/10.3389/fbioe.2025.1730129

Gaamouri, N., Hammami, M., Cherni, Y., Rosemann, T., Knechtle, B., Chelly, M. S., & Tillaar, R. van den. (2023). The effects of 10-week plyometric training program on athletic performance in youth female handball players. *Frontiers in Sports and Active Living*, *5*, 1193026. https://doi.org/10.3389/fspor.2023.1193026

Hadjisavvas, S., Efstathiou, M. A., Themistocleous, I.-C., Daskalaki, K., Malliou, P., Lewis, J., & Stefanakis, M. (2024). Can resistance training improve throwing performance in handball players? A Systematic review and meta-analysis. *BMC Sports Science Medicine and Rehabilitation*, *16*(1), 85. https://doi.org/10.1186/s13102-024-00872-y

Hammami, M., Gaamouri, N., Suzuki, K., Shephard, R. J., & Chelly, M. S. (2020). Effects of Upper and Lower Limb Plyometric Training Program on Components of Physical Performance in Young Female Handball Players. *Frontiers in Physiology*, *11*, 1028. https://doi.org/10.3389/fphys.2020.01028

Hang, F., Zhong, Y., Zhu, L., & Feng, S. (2025). Meta-analysis of the effects of plyometric training on athletic performance in handball athletes. *Scientific Reports*, *15*(1), 29298. https://doi.org/10.1038/s41598-025-15526-3

Henrique, J. R., Ramírez-Campillo, R., Afonso, J., Silva, R., Moran, J., & Clemente, F. M. (2023). Plyometric training programs in handball. *Kinesiology*, *55*(2), 298–336. https://doi.org/10.26582/k.55.2.13

Jakšić, D., Maričić, S., Maksimovic, N., Bianco, A., Sekulić, D., Foretić, N., & Drid, P. (2023). Effects of Additional Plyometric Training on the Jump Performance of Elite Male Handball Players: A Systematic Review. *International Journal of Environmental Research and Public Health*, *20*(3), 2475. https://doi.org/10.3390/ijerph20032475

Kamiş, O., Akçay, N., Keskin, K., Rolnick, N., García-Sánchez, C., Queirós, V. S. de, Turhan, F. H., Vieira, J. G., Montoye, A. H. K., & Aniceto, R. R. (2025). Short-duration ischemic preconditioning does not improve jump or change of direction performance in elite male handball players. *PLoS ONE*, *20*(10). https://doi.org/10.1371/journal.pone.0334747

Kartal, M. C., Can, İ., Yerlikaya, G., Kaya, S., & Güven, E. (2026). Acute Effects of Verbal Encouragement and Performance Feedback on Sprint, Agility, and Vertical Jump Performance in Young Female Handball Players. *Sport Mont*, *24*(3), 159–168. https://doi.org/10.26773/smj.261018

Kons, R. L., Orssatto, L. B. R., Dias, J. A., Pauw, K. D., Meeusen, R., Trajano, G. S., Pupo, J. D., & Detanico, D. (2023). Effects of Plyometric Training on Physical Performance: An Umbrella Review. *Sports Medicine - Open*, *9*(1), 4. https://doi.org/10.1186/s40798-022-00550-8

Kraemer, W. J., Vatne, E., Sáenz, C., Jones, P. A., Carpenter, T. J., Cencer, D., Enchelmeyer, K. E., Pulvermacher, K. R., Quebedeaux, C., Vatne, M., & Hagen, J. A. (2025). Neuromuscular Profiles of Female Collegiate Athletes: Variations in Countermovement Jump Metrics Across 8 NCAA Division I Sports. *The Journal of Strength*

INSPIREE PRESS

and Conditioning Research, *39*(9), 952–958. https://doi.org/10.1519/jsc.0000000000005170

Li, S., Yang, J., Mi, J., & Li, Y. (2025). The effects of repeated sprints on mid-range and three-point jump shot biomechanics in elite basketball players. *PeerJ*, *13*. https://doi.org/10.7717/peerj.19983

McClean, Z. J., Torres, R. da S., Herzog, W., Pasanen, K., Lun, V., Nimphius, S., & Jordan, M. J. (2025). The Influence of Sport Representation and Attitudes Toward Strength Training on Neuromuscular Performance Profiles in University Athletes: Part I Female Athletes. *The Journal of Strength and Conditioning Research*, *40*(3), 311–323. https://doi.org/10.1519/jsc.0000000000005309

Nakano, N., Fukashiro, S., & Yoshioka, S. (2018). The effect of increased shooting distance on energy flow in basketball jump shot. *Sports Biomechanics*, *19*(3), 366–381. https://doi.org/10.1080/14763141.2018.1480728

Noutsos, K. S., Meletakos, P., Kepesidou, M., & Bogdanis, G. C. (2024). Equal Effects of Low- and Moderate-Volume Supplementary Plyometric Training on Sprint, Change of Direction Ability, and Lower-Limb Power in Preadolescent Female Handball Players. *Journal of Functional Morphology and Kinesiology*, *9*(4), 204. https://doi.org/10.3390/jfmk9040204

Preissler, A. A. B., Clemente, F. M., Silva, A. F., Mendes, R., & Schons, P. (2026). Short-Term Changes, Individual Variability, and Associations with Baseline Physical Performance in Young Male Soccer Players During the Pre-Season. *Sports*, *14*(8), 344. https://doi.org/10.3390/sports14080344

Ramírez-Campillo, R., Álvarez, C., García-Hermoso, A., Keogh, J., García-Pinillos, F., Pereira, L. A., & Loturco, I. (2020). Effects of jump training on jumping performance of handball players: A systematic review with meta-analysis of randomised controlled trials. *International Journal of Sports Science & Coaching*, *15*(4), 584–594. https://doi.org/10.1177/1747954120928932

Ramírez-Campillo, R., Castillo, D., González, J. R., Moran, J., Villarreal, E. S. de, & Lloyd, R. S. (2020). Effects of Plyometric Jump Training on Jump and Sprint Performance in Young Male Soccer Players: A Systematic Review and Meta-analysis. *Sports Medicine*, *50*(12), 2125–2143. https://doi.org/10.1007/s40279-020-01337-1

Ramírez-Campillo, R., García-Hermoso, A., Moran, J., Chaabène, H., Negra, Y., & Scanlan, A. T. (2020). The effects of plyometric jump training on physical fitness attributes in basketball players: A meta-analysis. *Journal of Sport and Health Science/Journal of Sport and Health Science*, *11*(6), 656–670. https://doi.org/10.1016/j.jshs.2020.12.005

Ramírez-Campillo, R., Moran, J., Chaabène, H., Granacher, U., Behm, D. G., García-Hermoso, A., & Izquierdo, M. (2020). Methodological characteristics and future directions for plyometric jump training research: A scoping review update. *Scandinavian Journal of Medicine and Science in Sports*, *30*(6), 983–997. https://doi.org/10.1111/sms.13633

Ramírez-delaCruz, M., Bravo-Sànchez, A., García, P. E., Díaz, J. F. J., & Abián-Vicén, J. (2022). Effects of Plyometric Training on Lower Body Muscle Architecture, Tendon Structure, Stiffness and Physical Performance: A Systematic Review and Meta-analysis. *Sports Medicine - Open*, *8*(1), 40. https://doi.org/10.1186/s40798-022-00431-0

Robles-Palazón, F. J., McMahon, J. J., Ayala, F., & Comfort, P. (2024). Things to keep in mind when selecting physical assessments in youth soccer: Correlations between test performances, interlimb asymmetries, and effects of maturation. *PLoS ONE*, *19*(6). https://doi.org/10.1371/journal.pone.0305570

Savitha, V., Varghese, B. G., & CR, A. (2025). Approach kinematics of the jump shot in handball among national level handball players. *International Journal of Physical Education Sports and Health*, *12*(5), 661–665. https://doi.org/10.22271/kheljournal.2025.v12.i5j.4043

Sepdanius, E., Rifki, M. S., & Komaini, A. (2019). Tes dan Pengukuran Olahraga. In *RajaGrafindo Persada eBooks*. http://repository.unp.ac.id/22012/

Shan, G., & Zhang, X. (2022). Soccer Scoring Techniques—A Biomechanical Re-Conception of Time and Space for Innovations in Soccer Research and Coaching. *Bioengineering*, *9*(8), 333. https://doi.org/10.3390/bioengineering9080333

Villareal, E. S. de, Calleja-González, J., Alcaráz, P. E., Feito-Blanco, J., & Ramírez-Campillo, R. (2023). Positive Effects of Plyometric vs. Eccentric-Overload Training on Performance in Young Male Handball Players. *Journal of Functional Morphology and Kinesiology*, *8*(3), 113. https://doi.org/10.3390/jfmk8030113

Wang, X., Zhang, K., Samsudin, S., Hassan, M. Z. bin, Yaakob, S. S. N., & Dong, D. (2024). Effects of Plyometric Training on Physical Fitness Attributes in Handball Players: A Systematic Review and Meta-Analysis. *Journal of Sports Science and Medicine*, *23*(1), 177–195. https://doi.org/10.52082/jssm.2024.177

Williams, M. D., Liew, B. X. W., Castro, F., Davy, G. S., & Moran, J. (2024). A Comparison of Maximal Acceleration Between the "Tic Tac" Parkour Action, Drop Jump, and Lay-Up Shot in Youth Basketball Players: A Preliminary Study Toward the Donor Sport Concept. *Journal of Motor Learning and Development*, *13*(1), 146–165. https://doi.org/10.1123/jmld.2024-0007

Zhang, F., Liu, Y., Shi, S., Hanpeng, W., Liu, J., & Єременко, О. А. (2026). Comparative effects of unilateral and bilateral plyometric training on physical fitness in adolescent team-sport athletes: a systematic review and meta-analysis. *Frontiers in Physiology*, *17*, 1820331. https://doi.org/10.3389/fphys.2026.1820331

Zhao, R., Yao, J., & Dong, Y. (2025). From a female perspective: plyometric training's impact on jump, sprint, and change-of-direction performance in adult female athletes—a systematic review and meta-analysis. *Frontiers in Physiology*, *16*, 1633089. https://doi.org/10.3389/fphys.2025.1633089

INSPIREE IN PRESS