

Improving Volleyball Forearm Passing Through Progressive Wall Target Practice

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Abstract

Objectives: To describe changes in volleyball forearm passing performance and classroom mastery during two cycles of progressive wall target practice.

Materials and Methods: A classroom action research design used planning, action, observation, and reflection in two cycles, each comprising two lessons. The study involved 30 Grade VIII students assessed at baseline and after each cycle. Practice progressed from a fixed distance to distances of 1.5, 2.0, and 2.5 m, with peer coaching and individual corrective feedback introduced in the second cycle. Assessment involved a 60-second wall passing task. Descriptive statistics were recalculated from individual score tables. Mastery required a score of at least 75, and classroom success required at least 85% of students to meet this threshold.

Results: Mean scores increased from 65.07 ± 8.89 at baseline to 76.20 ± 6.40 after Cycle I and 85.40 ± 4.88 after Cycle II. Mastery increased from 7 of 30 students (23.33%) to 18 (60.00%) and then 30 (100.00%). The baseline-to-final mean increase was 20.33 points, while mastery increased by 76.67 percentage points. Reported activity scores rose from 52.40% to 71.20% and 86.40%.

Conclusions: Progressive wall target practice was accompanied by improved assessed passing performance and attainment of the classroom success criterion. These findings support its use as a practical instructional option in the studied class, although the design cannot establish an independent causal effect or lasting transfer to game performance.

Keywords: volleyball; forearm passing; wall target practice; classroom action research; physical education

Introduction

Forearm passing is a central skill in volleyball because it allows players to receive the ball and direct it toward a teammate. For beginners, successful execution requires a stable forearm platform, coordinated leg action, appropriate positioning, and control of the ball's direction. In school lessons, difficulties with these elements can interrupt practice and make it harder for students to experience successful repetitions. The instructional problem is therefore both technical and practical: teachers need tasks that provide a clear goal while allowing students to repeat the movement and recognize errors.

Wall target practice offers one way to organize this process. A marked area makes the intended direction visible, and the returning ball provides information about the preceding contact. Mardian (2020) reported improvement in forearm passing following wall and paired practice among students attending extracurricular



volleyball activities. Syahputra et al. (2024) similarly reported improved performance after wall target training in a one-group study of 15 extracurricular participants. These findings make wall practice a relevant instructional option, although neither establishes that the same improvement will occur in every class.

The value of a practice task also depends on the feedback that accompanies it. Zhou et al. (2021) found evidence that feedback supports motor skill learning in physical education, while the evidence favoring particular formats was less consistent. Han et al. (2022) also reported an overall benefit of feedback in their meta-analysis. In volleyball, Barzouka et al. (2006) observed improvements in service technique after instruction incorporating feedback and model observation, without equivalent improvement in the service outcome. This distinction matters because better technique and better task scores do not necessarily develop at the same rate.

Initial classroom observations identified inconsistent forearm contact, excessive arm swing, and difficulty controlling rebound direction. This study addressed these difficulties through progressive wall target practice in a Grade VIII class of 30 students. Its purpose was to describe changes in forearm passing scores, mastery, and reported classroom activity during two action research cycles. The contribution is a classroom-level account of how assessment and reflection informed instructional adjustments, rather than a controlled comparison of training methods.

Materials and Methods

Study Design

The study used classroom action research with two cycles of planning, action, observation, and reflection. Students were assessed before the intervention, after Cycle I, and after Cycle II. Each cycle comprised two lessons. The teacher reviewed performance and classroom observations after the first cycle and modified the next cycle accordingly. No comparison group, randomized allocation, delayed retention assessment, or game transfer test was reported.

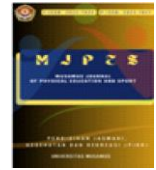
Study Participants

The study involved 30 Grade VIII students. All 30 students had recorded assessment scores at baseline, after Cycle I, and after Cycle II and were included in the analysis. Records were aligned by row number, and student names were omitted from this manuscript. Age and sex distribution were not available for the analyzed class. Actual data collection dates and the school name should be supplied by the authors.

Study Organization

At baseline, students completed a wall passing performance task lasting 60 seconds. The results chapter describes a target measuring 1.5×1.5 m and observation of the starting position, ball contact, and follow-through. The classroom mastery threshold was a score of 75, and the action research success criterion was mastery by at least 85% of students.

Cycle I introduced individual wall practice. In the first lesson, the teacher demonstrated the movement and students practiced without a time limit, focusing on stance, a stable arm position, and ball contact. In the second lesson, students practiced repeatedly from a fixed distance of 2 m, using the wall target in small groups. Observations and the end-of-cycle assessment informed reflection. The source identifies difficulty responding to



faster rebounds, bent elbows during contact, limited adjustment to force requirements, and insufficient individual feedback as reasons to revise instruction.

Cycle II introduced practice at distances of 1.5, 2.0, and 2.5 m. Students alternated practice turns and provided peer feedback on arm position and contact technique. The teacher added individual corrective feedback, supported by brief audiovisual examples or direct demonstrations as described in the source. The final lesson included preparation for, and completion of, the 60-second assessment. The intervention therefore combined wall practice, variation in distance, peer coaching, teacher feedback, and repeated assessment; these components were not evaluated separately.

Measures and Reporting Boundaries

The primary outcome was the student score recorded in the performance tables. Although the methods chapter describes counting successful target contacts, it does not explain how these counts were converted into the reported scores of 50–95 or how technical observations contributed to the score. Scores are therefore treated as recorded assessment values, not as raw contact counts or percentages. The target height also differs across sections: the methods specify 3.5 m for boys and 3.0 m for girls, whereas the Cycle I description specifies 2 m. The actual assessment setup and scoring rubric must be clarified before the study can be replicated.

Secondary information consisted of reported classroom activity percentages and narrative field observations. The source does not provide the activity rubric, item scores, observer agreement, or the underlying observation dataset. These percentages are reported as source summaries and are not treated as independently validated measurements. Brief student comments are also mentioned, but the interview procedure is undocumented; they are not analyzed as a formal qualitative dataset.

Statistical Analysis

The three individual score tables were used to recalculate arithmetic means, sample standard deviations, minimum and maximum scores, and the number of students meeting the threshold. Mastery was calculated as the number scoring at least 75 divided by 30, multiplied by 100. Changes in mastery and reported activity were expressed in percentage points. Paired score changes were derived by matching rows across assessment stages. Descriptive analysis was used because the study addressed improvement within one classroom; no inferential significance tests were added to the original action research design. The recalculated values replace the inconsistent aggregate summaries in the source, subject to verification against the original assessment sheets.

Ethical Considerations

The supplied document does not report an ethics review decision, school authorization details, parental consent, or student assent. The authors should provide the applicable approval and consent information before submission. Student names have been omitted from the revised manuscript, and the accompanying audit table uses anonymous identifiers.



Results

Changes in Passing Performance

The available dataset contained 30 recorded scores at each assessment stage. Table 1 presents the statistics recalculated from these records.

Table 1. Forearm passing scores and mastery across assessment stages

Outcome	Baseline	Cycle I	Cycle II
Students assessed	30	30	30
Mean score	65.07	76.20	85.40
Sample standard deviation	8.89	6.40	4.88
Minimum score	50	65	78
Maximum score	80	88	95
Students scoring at least 75	7	18	30
Students scoring below 75	23	12	0
Mastery percentage	23.33%	60.00%	100.00%

The mean score rose by 11.13 points from baseline to Cycle I and by 9.20 points from Cycle I to Cycle II. The overall mean increase was 20.33 points. All 30 recorded student scores increased at both transitions. Baseline-to-final individual increases ranged from 13 to 28 points. Score dispersion also decreased, with the sample standard deviation declining from 8.89 to 4.88.

Attainment of the Classroom Success Criterion

At baseline, 7 students met the mastery threshold. This increased to 18 students after Cycle I, leaving 12 below the threshold. Although the mean exceeded 75 at that stage, the mastery rate of 60.00% remained below the classroom success criterion of 85%. After Cycle II, the lowest recorded score was 78, and all 30 students met the threshold. Mastery increased by 36.67 percentage points during Cycle I and a further 40.00 percentage points during Cycle II. The overall increase was 76.67 percentage points, and the classroom success criterion was attained at the final assessment.

Reported Classroom Activity and Observations

Table 2 summarizes the classroom activity percentages stated in the original report. These values could not be recalculated because the underlying observation records were not supplied.

Table 2. Reported classroom activity scores

Measure	Baseline	Cycle I	Cycle II
Reported activity score	52.40%	71.20%	86.40%

Reported activity increased by 18.80 percentage points from baseline to Cycle I and by 15.20 percentage points from Cycle I to Cycle II, for an overall increase of 34.00 percentage points. Narrative field notes described greater participation, enthusiasm, and willingness to practice during the second cycle. These observations provide



contextual information but do not establish changes in psychological constructs such as motivation or confidence, which were not assessed with validated instruments.

Discussion

Interpretation of the Classroom Improvement

The recalculated results show a consistent upward pattern in assessed passing performance. Improvement involved both the class mean and the number of students meeting the threshold, while the spread of scores narrowed. The final result is educationally relevant to the stated action research objective: the class exceeded its predefined success criterion after instruction was revised. However, a final mastery rate of 100% means that every recorded score met the local threshold; it does not mean that every student had mastered all forms of volleyball passing or could perform equally well in a match.

The direction of change is consistent with previous wall practice research. Mardian (2020) reported improved forearm passing after wall and paired drills, and Syahputra et al. (2024) found improved performance after wall target training. A'la and Sukiyandari (2025) also reported better passing outcomes following practice with a marked wall target in a small volleyball sample. These studies concern related tasks, but differ in participants, instructional organization, and assessment methods. Their results support the plausibility of improvement without providing a basis for comparing numerical effect sizes directly with the present classroom scores.

Targets and Task Related Feedback

A wall target may help beginners connect their contact action with a visible result. When the ball misses the target or returns along an unexpected path, the student can identify a discrepancy between the intended and actual outcome. This is a plausible explanation for the observed score pattern, rather than a mechanism directly tested in the study. No ball trajectories, contact frequencies, or biomechanical measures were collected to determine exactly how students changed their movements.

The target also provides an external reference for attention. Wulf and Lewthwaite's (2016) OPTIMAL theory links motor performance and learning to motivational conditions and attention directed toward intended movement effects. Applied to this task, a cue about directing the ball into the marked area could complement brief corrections to stance and contact. The study did not manipulate attentional focus, assess autonomy, or measure expectancy, so the theory offers an interpretive framework rather than evidence that its proposed processes caused the improvement.

Instructional Revision and Corrective Feedback

The second cycle was not simply a repetition of the first. It introduced distance variation, peer coaching, and more individual correction. These changes may have allowed students to adjust force and timing under different task demands while receiving clearer information about errors. Zhou et al. (2021) found that feedback generally benefits motor skill learning in physical education, but also noted less consistent evidence for the superiority of specific formats. Han et al. (2022) likewise reported an overall feedback benefit. These findings support the use of purposeful feedback, while cautioning against assuming that video or peer feedback is always better than teacher instruction.



Barzouka et al. (2006) provide a useful qualification from volleyball instruction: feedback and model observation were accompanied by improvements in service technique, but not comparable improvement in the outcome measure. The present dataset contains overall scores without separate technique and accuracy components. Consequently, it cannot establish whether improvement primarily reflected better movement execution, more accurate target contacts, greater test familiarity, or some combination of these. Future assessment should score these components separately and specify the rubric before instruction begins.

The source describes the improvement as the formation of “muscle memory” and refers to the rebound as biofeedback. The available measurements do not support those physiological interpretations. A returning ball provides ordinary task-related sensory information; no physiological monitoring was reported. Similarly, higher immediate scores do not establish automaticity or lasting motor learning. A delayed assessment and a transfer task would be needed to determine whether the improvement persisted and generalized beyond wall passing.

Participation and Practical Implications

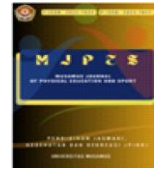
The reported rise in classroom activity is consistent with the field notes describing more active practice. A visible target and an individually repeatable task may have made practice easier to organize, but repetitions per minute, waiting time, and time spent retrieving balls were not measured. It would therefore be premature to attribute the activity increase to any one feature of the drill or to claim a measured improvement in motivation. The percentages should remain secondary contextual findings until their scoring procedure and underlying records are available.

For teachers, the most useful element is the sequence of instruction and reflection. Demonstration and fixed-distance practice were followed by an assessment of difficulties, then by varied distances and more individualized correction. A practical application would use a safe wall area, adequate spacing between students, a clear target, and brief cues matched to observed errors. Once students can control the rebound, teachers can introduce partner reception and game tasks to examine whether the skill transfers to less predictable conditions. Wall practice should be assessed in relation to the lesson objective rather than treated as a complete substitute for volleyball play.

Limitations and Future Research

Several limitations affect interpretation. The study involved one classroom without a comparison group, so the contributions of wall targets, additional practice, teacher attention, peer coaching, and repeated testing cannot be separated. Practice and assessment used closely related wall tasks, which may favor improvement specific to the test. There was no delayed retention test or game performance assessment. The activity data lack a documented scoring rubric, and observer reliability was not reported. These constraints limit causal inference and generalization.

Measurement documentation remains incomplete, particularly the assessment target height, score conversion, and classroom activity rubric. The descriptive results were calculated consistently from the 30 individual records. Subsequent work could compare wall target practice with matched partner practice, document the amount of practice, use a reproducible scoring protocol, and include independent assessment of retention and game reception.



Conclusions

Among 30 Grade VIII students, mean passing scores increased from 65.07 to 85.40, and mastery rose from 23.33% to 100.00% over two action research cycles. The classroom success criterion was met after instruction incorporated varied practice distances, peer coaching, and individual feedback. Progressive wall target practice is therefore a promising instructional option for the studied classroom. The results describe improvement during the intervention and do not establish an independent causal effect or durable transfer to volleyball games.

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Author Verification Notes

This section is an editorial appendix and should be removed from the submission version after the issues below have been resolved. The revised manuscript follows the supplied journal article structure; it is not a translation of thesis front matter or all five original chapters.

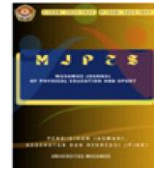
Participant and Measurement Information

- Provide actual research dates, lesson duration, equipment specifications, target height, assessment distance, and the number of assessment attempts. Clarify whether the reported 2 m target position denotes its lower edge or another reference.
- Provide the scoring rubric and explain the conversion of successful contacts into assessment scores. Confirm whether technique ratings were incorporated and whether the same assessment protocol was used at all three stages.
- Provide the classroom activity instrument, scoring denominator, observation sheets, observer information, and any reliability evidence. Until then, activity percentages remain source-reported summaries.
- Retain the original assessment sheets as supporting records for the 30 student scores reported in the manuscript.
- Complete corresponding author information, affiliation wording, approval and consent details, acknowledgments, funding, and conflict declarations. No approval, funding, or consent statement has been invented.

Corrections to Aggregate Results

The manuscript consistently follows the 30 individual records in the source tables. The comparison below documents the arithmetic corrections made to the original aggregate summaries.

Outcome	Source summary	Recalculated from 30 rows
Baseline mean	65.47	65.07
Cycle I mean	76.07	76.20
Cycle II mean	85.13	85.40
Baseline mastery	8 students / 26.67%	7 students / 23.33%
Cycle I mastery	19 students / 63.33%	18 students / 60.00%
Cycle II mastery	30 students / 100.00%	30 students / 100.00%
Overall mean increase	19.66 points	20.33 points
Overall mastery increase	73.33 percentage points	76.67 percentage points



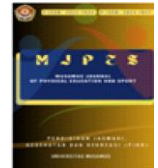
The Results section consistently follows the individual score tables: 7 students met the threshold at baseline, 18 after Cycle I, and 30 after Cycle II. No p-values or physiological mechanisms have been inferred.

Reference Verification

Seven cited references were checked against publisher pages, publisher PDFs, journal issue metadata, or author-hosted full text. All seven have identifiable DOI records or DOI links displayed in the retrieved scholarly sources. Direct doi.org retrieval was unavailable for several links in this session; universal live HTTP resolution could therefore not be confirmed. Unverifiable citations and unrelated badminton references from the original bibliography were excluded. Each retained reference is cited in the manuscript.

Anonymized Score Audit

Student ID	Baseline	Cycle I	Cycle II	Final change
S01	55	70	82	27
S02	60	72	85	25
S03	78	85	92	14
S04	62	76	84	22
S05	58	70	80	22
S06	80	88	95	15
S07	65	78	86	21
S08	70	80	88	18
S09	50	65	78	28
S10	75	82	90	15
S11	60	72	82	22
S12	68	78	86	18
S13	55	68	78	23
S14	77	85	92	15
S15	62	75	85	23
S16	58	70	80	22
S17	80	88	95	15
S18	76	84	90	14



Student ID	Baseline	Cycle I	Cycle II	Final change
S19	65	76	86	21
S20	52	68	80	28
S21	70	78	88	18
S22	58	72	82	24
S23	79	85	92	13
S24	60	74	82	22
S25	64	76	85	21
S26	55	68	78	23
S27	68	78	86	18
S28	72	80	88	16
S29	58	70	82	24
S30	62	75	85	23

Rows are matched by position in the source tables. One name varies slightly across stages, so the final identity match should be confirmed against the class register. No personal names are reproduced here.