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ADMINISTRATIVE INFORMATION**Support** - None.**Review Stage at time of this submission** - Preliminary searches.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202670010**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 5 July 2026 and was last updated on 5 July 2026.**INTRODUCTION**

Review question / Objective P: Team-sport athletes with systematic training backgrounds (football, basketball, volleyball, handball, rugby), covering collegiate, semi-professional and elite athletes; exclude untrained sedentary people, injured rehabilitation patients, and individual-sport athletes without available team-sport subgroup data.

I: Platform-based whole-body vibration training, including acute single pre-match activation and multi-week long-term auxiliary strength training; local vibration tools such as massage guns are excluded.

C: Four comparison groups: conventional vibration-free warm-up, passive rest blank control, low-amplitude sham vibration, equal-duration traditional strength or plyometric training.

O: Primary outcomes: countermovement jump height, linear sprint time, T-test/505 agility; secondary outcomes: repeated sprint ability and lower-limb explosive power.

Rationale Team sports require athletes to complete repeated jump, sprint and direction changes during matches. These three physical abilities directly decide competitive performance. Many coaches use whole-body vibration training as auxiliary warm-up or supplementary strength training. This training method brings low physical load to athletes, so it is widely used in preparation and competition periods.

However, existing published meta-analyses have obvious limitations. Most old reviews mix all types of athletes together, without special analysis for team-sport populations. Past papers also fail to separate single acute vibration stimulation and long-term cyclic vibration training. Different intervention types lead to inconsistent research results.

Besides, most previous literature only updated search data to 2024. A large number of new high-quality randomized trials have been published after 2024, and no review has integrated these latest data for quantitative analysis.

This study searches multiple mainstream sports science databases, collects all qualified trial data

and conducts layered subgroup analysis. It quantifies the real influence of vibration training on core physical indicators of team athletes. This work fills the blank of targeted evidence and provides clear reference for coaches to make standardized vibration training plans.

Condition being studied This review targets the physical fitness characteristics of team-sport athletes. It focuses on analyzing whether whole-body vibration training can improve their core competitive physical indicators including jump, sprint and agility, and further compares the effect difference between acute pre-match vibration activation and long-term cyclic vibration training.

METHODS

Search strategy We search five mainstream English databases: PubMed, Cochrane Library, Embase, Web of Science, EBSCOhost.

Search time range: from database establishment to the day before formal screening. We do not set publication year limits.

Three core keyword groups are combined by AND and OR logic:

Vibration training terms: whole-body vibration, WBV, vibration platform training

Population terms: team-sport athletes, basketball, football, volleyball, handball, rugby

Outcome terms: jump, sprint, agility, countermovement jump, change of direction

We also read reference lists of included papers to find extra eligible studies. We search five mainstream English databases and two Chinese databases. English databases: PubMed, Cochrane Library, Embase, Web of Science, EBSCOhost. Chinese databases: CNKI, Wanfang.

Search time range: from database establishment to the day before formal screening. We do not set publication year limits.

Three core keyword groups are combined by AND and OR logic:

Vibration training terms: whole-body vibration, WBV, vibration platform training

Population terms: team-sport athletes, basketball, football, volleyball, handball, rugby

Outcome terms: jump, sprint, agility, countermovement jump, change of direction

We also read reference lists of included papers to find extra eligible studies.

Participant or population Inclusion: Athletes take regular systematic team sport training. Sports are basketball, football, volleyball, handball, rugby. Athlete levels include university team, semi-professional and professional.

Exclusion: Untrained ordinary adults; patients with muscle bone injury or chronic disease; athletes only take single sports training (cannot separate team athlete data).

Intervention Inclusion: Vibration training operated on vibration platforms. Two types are accepted. Type one: single vibration stimulation before matches (acute). Type two: continuous multi-week vibration training (chronic). Static and dynamic leg postures during training are both allowed.

Exclusion: Local vibration tools such as massage guns, vibration foam rollers, vibration massage devices. We only discuss these excluded contents in text description, not quantitative combination.

Comparator Inclusion criteria: Four valid control types: routine training without vibration, passive rest blank control, low-amplitude sham vibration, equal-duration traditional strength or plyometric training.

Exclusion criteria: Mixed compound training schemes that cannot split independent training factors. Such designs cannot separate the single effect of vibration training.

Study designs to be included Inclusion: Chinese and English parallel randomized controlled trials, randomized crossover trials. These two types will enter quantitative meta-analysis. Exclusion: Review articles, conference abstracts without complete numerical data, animal experiments, case reports, pure observational research. We do not extract data from these papers.

Eligibility criteria A study can be included only when it meets all four rules below:

Research subjects are qualified team-sport athletes defined in this protocol.

The paper takes platform whole-body vibration as intervention and sets clear control groups.

The study reports complete quantitative data of jump, sprint or agility.

The study belongs to randomized controlled trial or randomized crossover trial.

Any paper that fails one rule will be excluded directly.

Information sources PubMed, Cochrane Library, Embase, Web of Science, EBSCOhost, and reference lists of all included studies. We read full texts when they are available.

Main outcome(s) 1 Primary outcomes: countermovement jump height, linear sprint time, T-test agility, 505 change-of-direction performance 2 Secondary outcomes: repeated sprint ability, lower-limb explosive muscle power

All outcomes adopt objective test numerical data with complete mean value and standard deviation.

Additional outcome(s) Static and dynamic balance ability, lower limb static muscle strength.

Data management Two researchers independently finish literature screening and data extraction. We sort all study information into standardized tables. All disagreements will be solved through group discussion.

Quality assessment / Risk of bias analysis We use the Cochrane RoB 2 tool to judge bias risk of all included randomized trials.

We assess five fixed parts: randomization process, intervention deviation, missing outcome data, outcome measurement, selective result reporting. Each part gets three grades: low risk, some concerns, high risk. We write detailed judgment reasons in supplementary tables.

Strategy of data synthesis 1 We use random-effects model for all quantitative merging. Unified effect indicator is Hedges' g. Positive g value means vibration training works better than control groups.

2 We calculate effect sizes separately for four outcome groups: jump performance, sprint performance, agility, balance and strength.

3 We carry out subgroup analysis according to sport type, total training weeks and weekly training frequency to find heterogeneity sources.

4 We conduct leave-one-out sensitivity analysis to test result stability.

5 If one outcome group contains more than 8 studies, we draw funnel plot and run Egger test. Trim-and-fill method will be used to adjust publication bias.

6 Studies about acute recovery vibration and vibration foam rolling will only get qualitative summary without quantitative merging.

Subgroup analysis 1 Different sports: basketball, football, volleyball

2 Total intervention duration: short (≤ 6 weeks), medium (7–12 weeks), long (≥ 13 weeks)

3 Weekly training times: two sessions per week, three sessions per week

If one subgroup contains less than three studies, we only describe differences and do not draw definite conclusion.

Sensitivity analysis We use leave-one-out method. We delete one study each time and recalculate pooled effect size. We observe obvious changes of overall results after deletion and discuss high-influence literature separately in text.

Language restriction We include English published studies.

Country(ies) involved China.

Other relevant information None

Keywords whole-body vibration training; team-sport athletes; jump performance; sprint performance; agility; systematic review; meta-analysis.

Dissemination plans After finishing all analysis work, we submit the complete manuscript to peer-reviewed sports academic journals.

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