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Tiffany Sam

Sammy Nguyen

Alex Taylor

Tim Miserendino

Dr. Amy Humphrey

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The Effects of Dry Needling and Whole-Body Vibration on Jump Height and Performance in Adults: A Critically Appraised Topic

Tiffany Sam, SPT, Sammy Nguyen, SPT, Alex Taylor, SPT, Tim Miserendino, SPT, and Dr. Amy Humphrey, PT, DPT

Department of Physical Therapy Program, Messiah University

MISSION STATEMENT

The mission of the Messiah University Doctor of Physical Therapy Program is to graduate ethical, compassionate, autonomous doctors of physical therapy who are competent to practice in diverse settings. Graduates will be life-long learners informed by evidence-based practice who exemplify the values of Messiah University and the physical therapy profession.

INTRODUCTION / PURPOSE

Whole-body vibration (WBV) involves oscillation of the plates to produce vibrations. It causes rapid eccentric-concentric muscle action to enhance muscle performance due to rapid reflex and stretch-reflexes. WBV can also cause temporary positive changes to soft tissues like skeletal muscle by increasing circulation.



Dry needling (DN) is an invasive skilled intervention performed by licensed physical therapists requiring a thin filiform needle through the skin to reach soft tissues like muscle or bone that causes a mild inflammatory response to improve pain and relax muscles tissue.

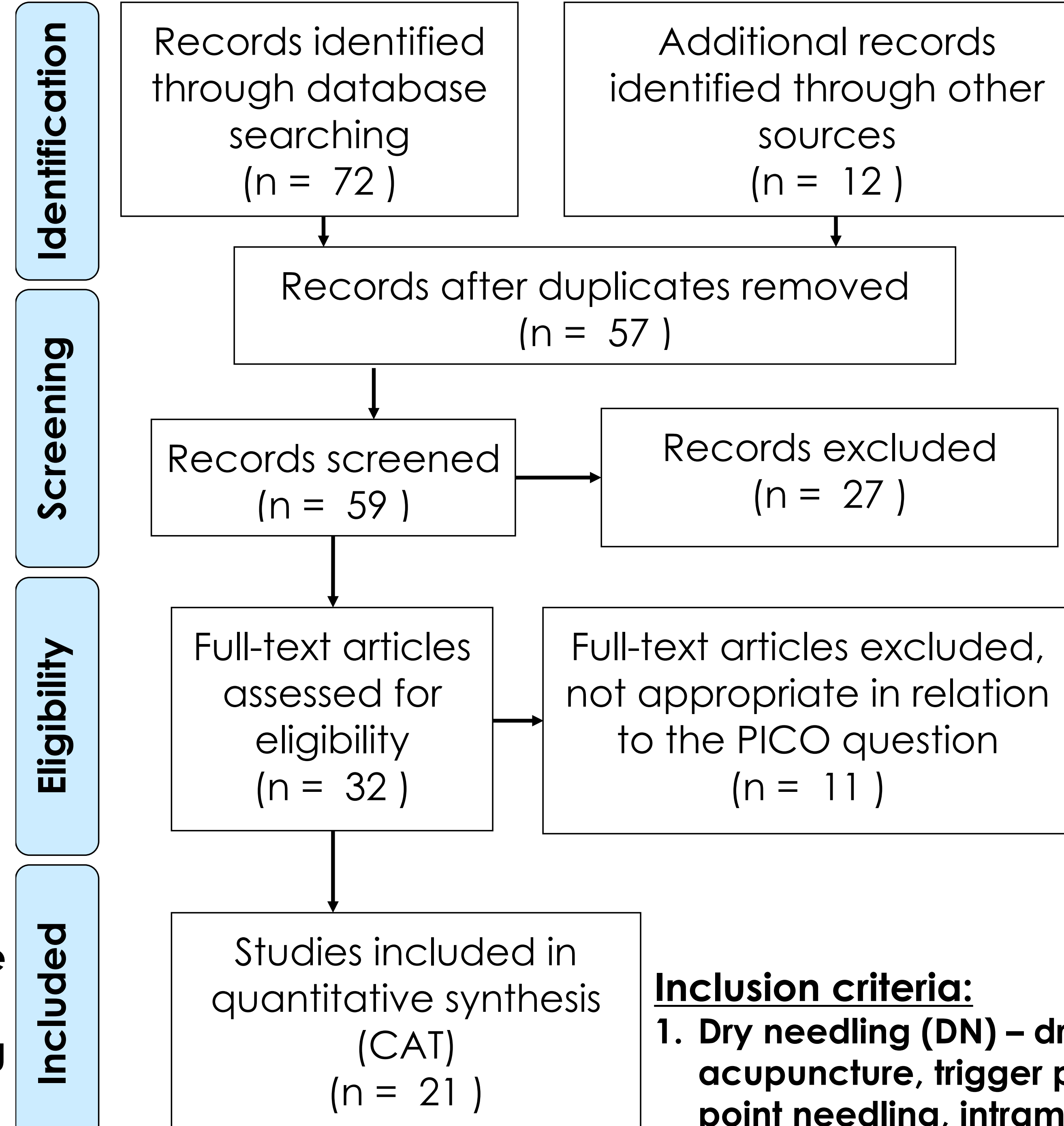
Analysis of jump height was the outcome measure used to determine muscle performance.

The purpose of our study is to compare WBV and DN in regard to improving jump performance in the healthy and injured adult populations.

CLINICAL RELEVANCE

- Both dry needling and whole-body vibration can elicit positive effects when compared to a control group.
- Both dry needling and whole-body vibration may impact jumping performance.
- The use of WBV and/or DN in combination with other interventions may also enhance lower extremity muscle power in jumping performance.
- WBV paired with therapeutic interventions have shown more correlations with jump performance compared to DN.
- There needs to be more clinical practice involving the use of either interventions to advance the current literature of jump performance for dry needling and/or whole-body vibration.

METHODS



- **Population:** Adults (18-64 y.o.; healthy and injured individuals)
- **Intervention:** Dry needling, DN, acupuncture
- **Comparison:** Whole-body vibration, WBV, vibration exercise, vibration training
- **Outcome:** Jump height, jump, jump performance

Databases: PubMed, Medline, CINAHL, Sport discus

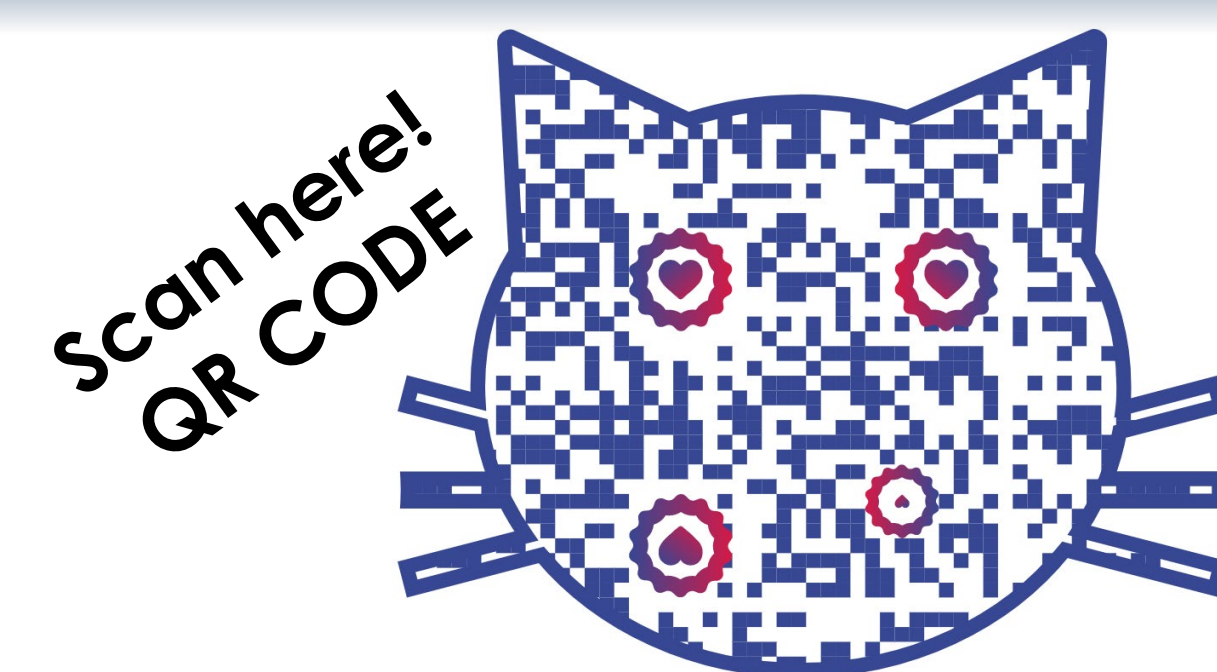
Term limits: English language, full text articles, academic journals

Exclusion criteria: Children/adolescents, older adults (individuals older than 56 years old), and not human participant.

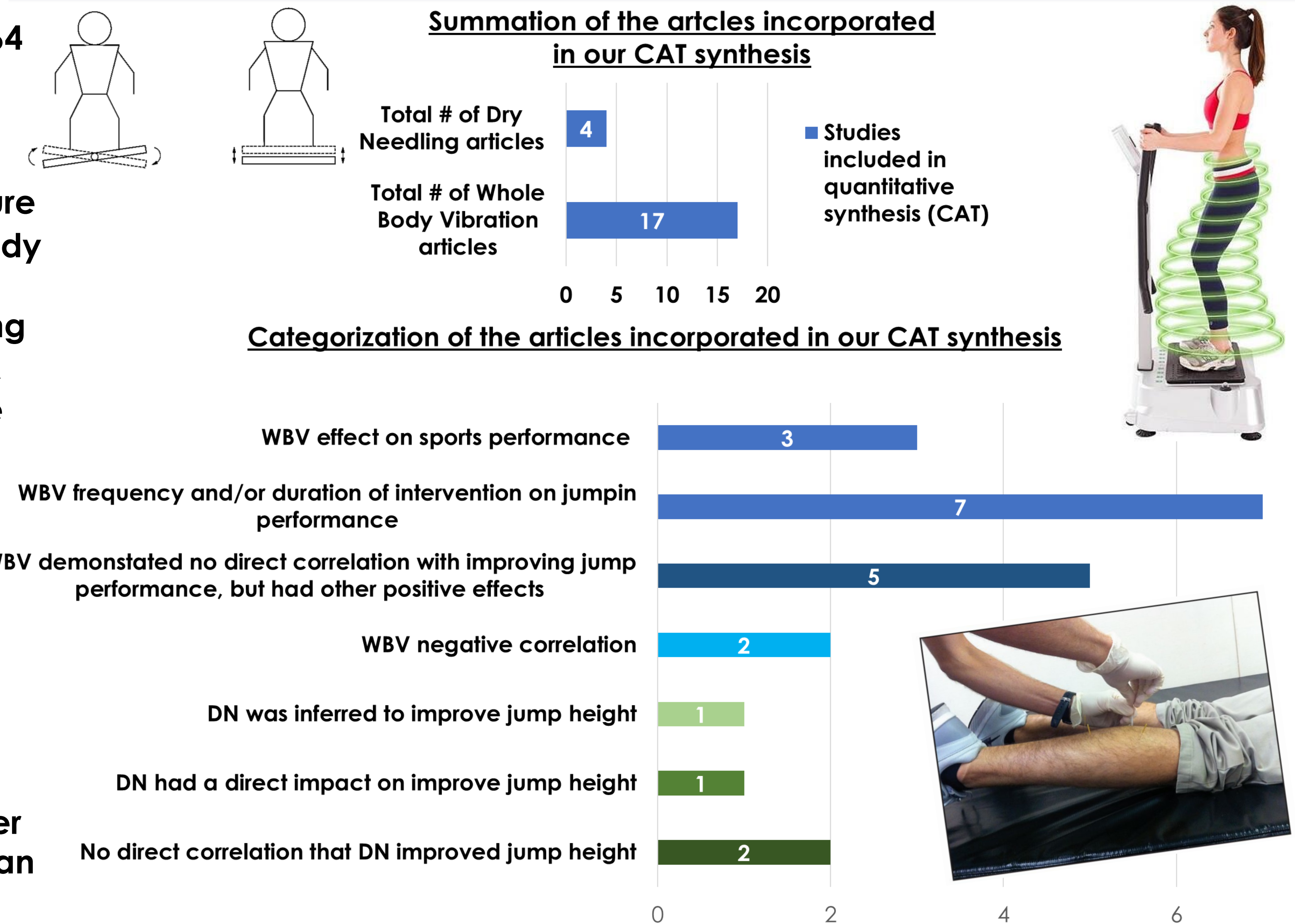
Inclusion criteria:

1. Dry needling (DN) – dry needling technique, acupuncture, trigger points, acupuncture, trigger point needling, intramuscular stimulation
2. Whole body vibration (WBV) – whole-body vibration, WBV, vibration training, vibration exercise, vibration platform
3. Adults (18-55 y/o)
4. Jump height- jump, jump performance, jump power, long jump, jump training, squat jump, hop, double leg jump, single leg jump//hop
5. RTC, cohort studies, case study, case series
6. Articles within the past 10 years (2011-2021)

REFERENCES



RESULTS



CONCLUSION

- Based on current research, more evidence exists that WBV improves jump performance compared to DN
- WBV was found to improve jump performance when combined with other therapeutic interventions in relation to higher frequencies
- There is lack of research for DN regarding to improving jump performance
- Additional evidence identifies how WBV and DN enhance other physiological attributes not related to jump height or performance
- There is limited evidence using DN and WBV as a physical therapy intervention in a clinical setting to improve jump performance, requiring further research on both interventions.