

Imagine, sing, play!

- combined mental, vocal and physical practice improves musical performance

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Introduction

Classical musicians face a high demand for flawless performance, leading to highly intensified practice activity. Whereas the advantage of using mental strategies are well documented in sports research, few studies have explored the efficacy of mental imagery and overt singing on musical instrumental learning.

Methods

50 classically trained trumpet students played short unfamiliar pieces. Performances were recorded before and after applying either A) physical practice (PP), B) mental imagery (MP), C) overt singing with optional use of solfège (SOL), or D) a combination of A, B and C (COM) for three minutes. In a no-practice (NP) control condition, participants read a non-related article (Fig. 1).

Three experts independently assessed pitch and rhythm accuracy, sound quality, intonation, and musical expression in all recordings.

Results

We found higher gains in the overall performance as well as in pitch accuracy for the physical practice (A) and the combined practice (D), compared to no practice. Furthermore, the combined strategy (D) yielded a significant improvement in musical expression not found with other strategies (Fig. 2).

Pitch performance improvement was positively correlated with previous solfège training and frequent use of random practice strategies (Fig. 3). Duration and onset of music training, amount of daily practice and accumulated hours of music training had no significant effect on performance scores.

Conclusion

The findings suggest that applying practice strategies that involve imagery and singing can reduce physical practice quantity while maintaining the same performance quality. Furthermore, the study adds valuable insight into brass instrument performance, which may generalize to musical practice in general and, in a wider perspective, to many other forms of learning, in which cognitive processes and motor skills are involved.

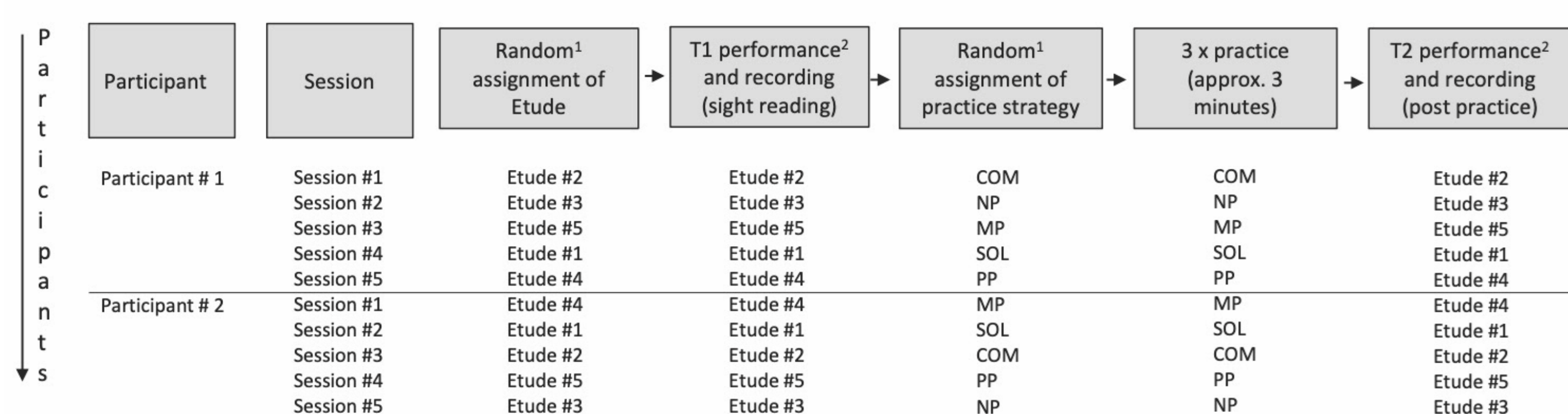


Fig 1. Experimental setup, exemplifying the potential course of five sessions for two participants. 50 participants took part in 5 sessions each, totaling to 250 sessions and 500 recordings. ¹Randomizations; ²with metronome.

Demographic/musical background and practice habits data for participants (N=50)

Gender (f/m)	Mean age (st. dev.)	Mean age at onset of music training	Mean age at playing the trumpet	Total hrs of playing age 4-17 (average)	Learned solfège using solmization (yes/no)	Learned Fixed-do/Moveable-do/both	Practice hrs per day (average)	Use of singing in practicing: every day/occasionally/a few times per week/never	Use of auditory imagery/motor imagery/both	Use of blocked practice/random practice/both
11/39	22.7 y (2.8)	6.4 y (1.9)	8.1 y (2.1)	5856	32/18	17/5/12	3.1 (1)	29/6/14/1	15/31/4	13/21/16

Table 1. Participants' demographic, musical background and lifestyle data (top) and musical practice habits data (bottom) as reported in a follow-up questionnaire.

Selected literature

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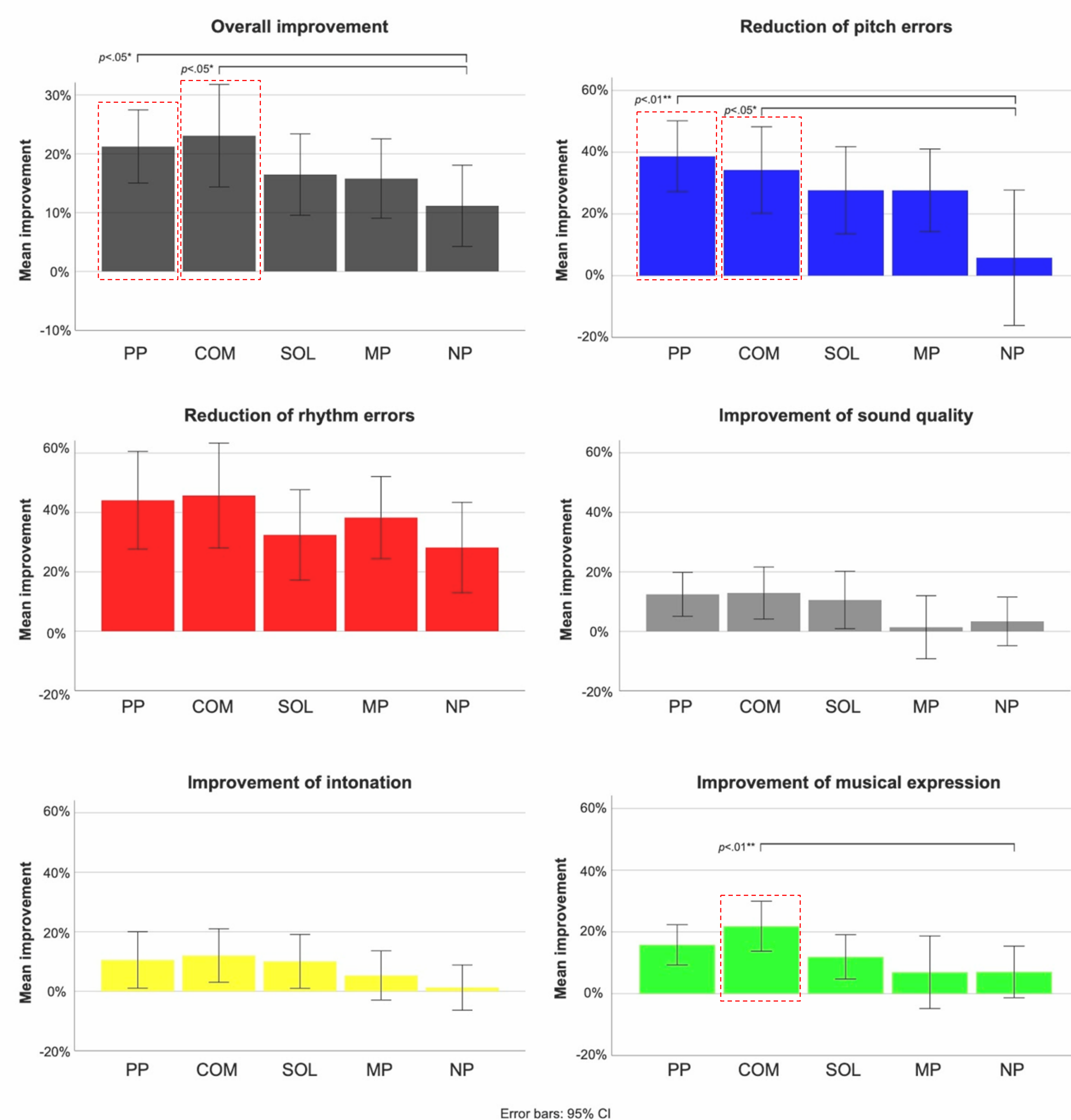


Fig. 2. Mean overall improvement and improvement in pitch, rhythm, sound quality, intonation, and musical expression, for the five different practice strategies

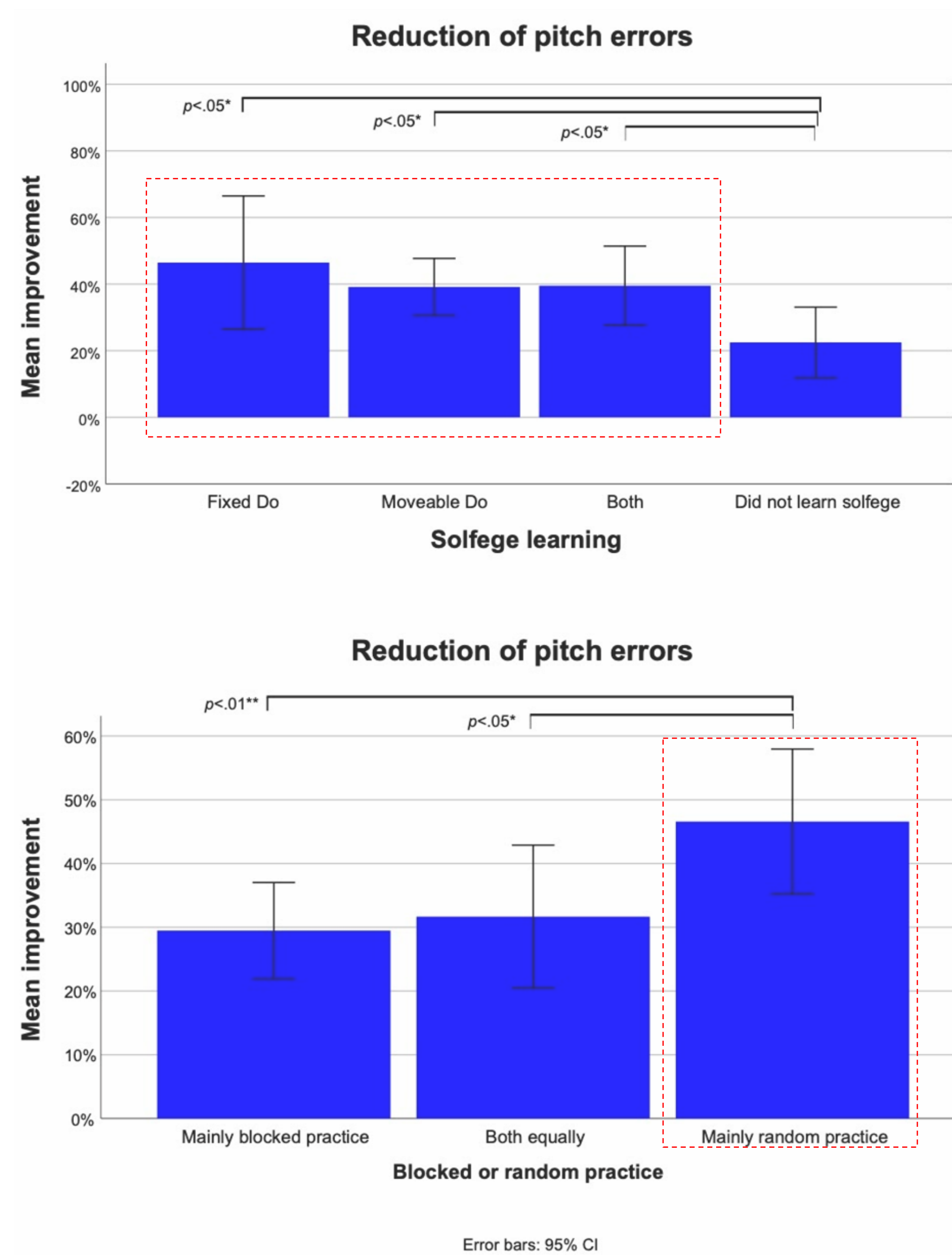


Fig. 3. Effects of reported learning of different solfège approaches and blocked vs. random practice methods on pitch accuracy improvement.

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