THE EFFECTIVENESS OF RELAXATION MUSIC IN REDUCING POST-EXERCISE HEART RATE AMONG FUTSAL EXTRACURRICULAR STUDENTS AT SMAN 1 MANDIRANCAN

RAMA WIJAYA

Pendidikan Jasmani Kesehatan dan Rekreasi
Fakultas Pendidikan Olaharag dan Kesehatan
Universitas Pendidikan Indonesia

INTRODUCTION

Why post-exercise recovery matters

Futsal is a fast paced, high intensity sport that drives a sharp rise in heart rate during play. After exercise, heart rate does not return to normal immediately it declines gradually, and the speed of this decline reflects the body's recovery capacity. Optimal recovery reduces fatigue and prepares the body for the next session, while poor recovery causes prolonged fatigue that affects performance. Relaxation music slow tempo, steady rhythm audio is believed to support this recovery by engaging the autonomic nervous system, calming the body after intense physical activity.

Study Focus

- Objective: examine the effect of the instrumental track “Weightless” (Marconi Union) on post-exercise heart rate reduction.
- Compare its effectiveness against passive recovery without music.
- Setting: futsal extracurricular students, SMAN 1 Mandirancan.
- Design: quantitative experiment, pretest-posttest control group.

Exertion

High-intensity futsal raises heart rate during play.

Recovery

Heart rate declines gradually after exercise stops.

Relaxation Music

Calms the autonomic nervous system to speed recovery.

RESEARCH GAP

Post-exercise recovery among student futsal athletes is generally limited to passive rest, without any structured relaxation method. Prior studies support music as a recovery aid in general sport contexts, but evidence on relaxation music specifically and the track “Weightless” in particular within Indonesian high school extracurricular futsal remains limited.

Recovery is unstructured

Post-exercise recovery is typically passive rest only, with no specific relaxation method applied.

Limited local evidence

Research on relaxation music and heart rate recovery in Indonesian school futsal extracurriculars is scarce.

“Weightless” untested in context

The instrumental track's use as a post-futsal recovery tool has not been examined in this population.

METHODS

This study used a quantitative experimental approach with a pretest–posttest control group design. Both groups followed the same futsal training program; the experimental group then received 10 minutes of relaxation music during recovery, while the control group underwent passive recovery without music. Heart rate was measured with a Polar Heart Rate Monitor before and after the recovery phase.

Research design			
Group	**Pre-test**	**Treatment**	**Post-test**
Experiment	O_1	X	O_2
Control	O_1	–	O_2

Population & sample
30 futsal extracurricular students; purposive sampling; randomly split into 15 experimental / 15 control.

Instrument
Polar Heart Rate Monitor; “Weightless” (Marconi Union) played via earphones for 10 minutes.

Procedure
6 training sessions (warm-up, main exercise, Small-Sided Games), then pretest → recovery → posttest heart rate.

Analysis
Shapiro-Wilk normality, Levene's homogeneity, Paired-Sample t-test, Independent-Sample t-test on gain scores.

RESULTS

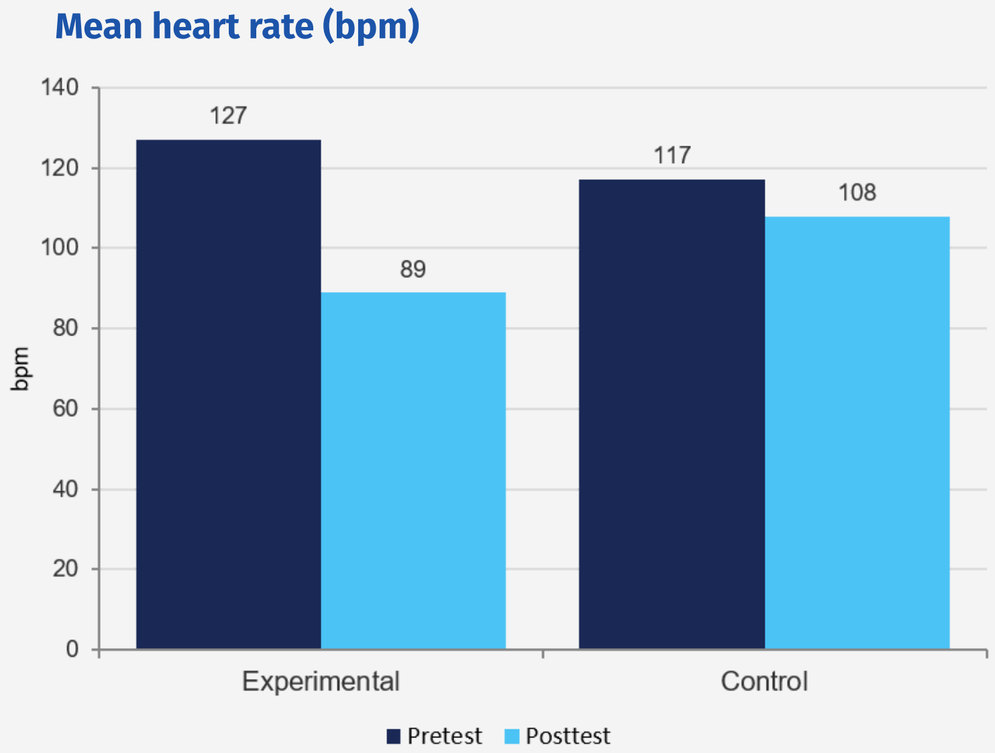
Heart rate decline, experimental vs control

The experimental group's heart rate fell from 127.14 to 88.86 bpm (–38.28 bpm; t = 24.671, Sig. = 0.000), while the control group fell from 117.14 to 108.00 bpm (–9.14 bpm; t = 3.913, Sig. = 0.008). An Independent-Sample t-test on the gain scores confirmed a significant difference between groups (t = 10.392, df = 12, Sig. = 0.000; mean difference = 29.14 bpm), with both groups statistically equivalent at baseline.

–38.28 bpm – Experimental group decrease

–9.14 bpm – Control group decrease

29.14 bpm – Mean difference (gain score)



DISCUSSION

How relaxation music speeds recovery

The large decline in the experimental group suggests relaxation music activates parasympathetic nervous system activity while suppressing the sympathetic dominance built up during exercise. The control group's smaller, natural decline reflects the body's own recovery mechanism proceeding without external assistance. The 29.14 bpm gap between groups shows music does not merely accompany recovery it accelerates and amplifies it, acting as a catalyst rather than a passive complement.

Lower sympathetic arousal → parasympathetic activation → faster heart rate normalization

Parasympathetic activation

Relaxation music stimulates the parasympathetic system, slowing breathing and heart rate.

Natural recovery mechanism

The control group's decline reflects the body's own physiological recovery process.

Catalyst effect

Music amplifies recovery beyond what the body achieves on its own.

CONCLUSION

Main takeaways and recommendations

Relaxation music significantly reduces post-exercise heart rate and is significantly more effective than passive recovery without music among futsal extracurricular students. Both groups were statistically equivalent before treatment, strengthening the case that the difference in recovery stems from the music itself rather than pre-existing group differences.

Music significantly reduces heart rate

Experimental group: −38.28 bpm (t = 24.671, Sig. = 0.000).

Music outperforms passive recovery

Gain-score comparison: t = 10.392, Sig. = 0.000, mean difference 29.14 bpm.

Groups were equivalent at baseline

No significant pretest difference (Sig. = 0.134), isolating the treatment effect

Practical recommendation

Coaches and PE instructors can integrate 10 minutes of relaxation music such as “Weightless” into the cool down phase after training a simple, low cost, low-risk addition that needs only a speaker or earphones. Schools are encouraged to make music players available in extracurricular training spaces.

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