

UNIVERSITI TEKNOLOGI MARA

**THE EFFECT OF DAILY
PROBIOTIC SUPPLEMENTATION
IN FOOTBALL PLAYERS:
PSYCHOPHYSIOLOGICAL
FEEDBACKS PERSPECTIVES**

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MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Postgraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.


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ABSTRACT

Microbiota-gut-brain axis discovered in the last decade and contemporary researchers are exploring the new dimensions of this phenomenon. Psychobiotics that are derived from probiotics contain psychotropic properties, and correct administration can positively affect psychological states. Competitive football players who go through strenuous training and frequent competitions are more vulnerable to undergo stress and anxiety. Up to date none of the studies were conducted to identify the effect of probiotics on psychological conditions among competitive footballers. Thus, the objective of the current study is to determine the effect of daily probiotics supplementation on perceived stress and competitive anxiety among football players. This quantitative research study used randomised, double-blinded, placebo-controlled design purposively recruiting 20 male footballers (age 19.0 ± 0.72 years; weight 64.29 ± 6.21 kg; height 170.50 ± 5.88 cm; BMI 22.15 ± 2.09 kg/m²) and randomly divided them into two research conditions where they received either probiotic (*Lactobacillus Casei* Shirota strain 1×10^9 CFU) or placebo supplement over 8 weeks. Psychophysiological methods were used to measure perceived stress and competitive anxiety at the baseline, week 4, and week 8 during the intervention. Psychological measures were taken using self-reported inventories and electroencephalography, heart rate and electrodermal responses were used as physiological measures simultaneously with a cognitive test. Anthropometric body composition measures and diet records were taken at the baseline and at week 8. Data statistically analysed using mixed factorial ANAOVA and independence *t*-test. Results revealed that probiotic group compared to the placebo group significantly decreased the cognitive state anxiety scores (18.20 ± 3.94 vs 23.11 ± 4.81 , $p = 0.02$), somatic state anxiety (13.00 ± 2.83 vs 16.78 ± 3.03 , $p = 0.01$) and perceived stress scores (12.30 ± 1.70 vs 14.67 ± 1.66 , $p = 0.00$) but no statistical significant was found in self-confidence (34.80 ± 3.16 vs 32.89 ± 3.62 , $p = 0.23$). Physiological responses such as heart rate and electrodermal responses ($p > 0.05$) showed no significant difference between probiotic and placebo groups after 8 weeks. Similarly, brain waves showed no significant difference during the study period except for the theta wave and delta brain wave ($p < 0.05$) at week 4. The reaction time of the cognitive task showed significant improvement in the probiotic group ($p < 0.05$), thus, the accuracy percentage showed no significant difference between groups. Similarly, no difference was found on anthropometric, body composition and nutrient intake between two groups. In conclusion, daily probiotic supplementation showed a promising approach to regulate perceived stress and competitive anxiety among football players and according to the brain wave and cognitive test results probiotics proves its positive effects on sustained attention. Nevertheless, more research needed to elucidate the present results. Athletes may use probiotics as a potential nutritional therapy to relieve psychological distress associated with daily training and frequent competitions. Probiotic supplementation may indirectly enhance athletic performances by improving not only psychophysiological responses but improving secondary health benefits among the athletes.

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