

HARMONY IN PROGRESS:

**INTEGRATING SCIENCE, TECHNOLOGY,
AND
SOCIAL INNOVATION
FOR SUSTAINABLE DEVELOPMENT GOALS**



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YST023 - FIT FIGHT MUSCLE CARD EDITION

Nurul Ardini Ahmad Sallehein , Muhammad Adam Khairul Anwar, Sharina Salmi Azmi*, Nurul Syafawani Halim, and Siti Aida Lamat

Universiti Teknologi MARA (UiTM) Kampus Seremban

*Corresponding author: shari179@uitm.edu.my

ABSTRACT

This project introduces the Fit Fight Muscle Card Edition, a gamified educational tool designed to enhance students' understanding of human muscular anatomy. Recognising that traditional memorisation methods might limit engagement and retention, the creators developed a versatile game comprising two decks: one with 18 Muscle Cards displaying major muscles through images and names, and another with Q&A Cards containing questions related to those muscles. During gameplay, students draw one card from each deck and respond within 30 seconds, earning points for correct answers. The approach involves small group interactions where students collaborate and compete, fostering active participation and peer learning. As students engage with the cards, they are prompted to identify muscle names, functions, and their associated movements, thereby connecting theoretical knowledge with practical application. This interactive method promotes active learning, critical thinking, and the practical application of anatomical knowledge by linking muscles to functional movements and exercises. Preliminary evaluations indicate that the game improves muscle recognition, recall, and understanding while fostering motivation and peer interaction. Its cost-effective, adaptable design caters to various learning styles, including visual, kinaesthetic, and auditory, making it a valuable supplement to traditional anatomy teaching. Overall, the *Fit Fight Muscle Card Edition* offers an engaging, effective, and innovative approach to supporting anatomy education and enhancing student learning outcomes.

Keywords – Active Recall, Anatomy, Educational Game, Muscular System, Sports Science

INTRODUCTION

A thorough understanding of the human muscular system is vital for students studying anatomy, sports science, and related health disciplines. Traditional approaches often emphasise rote memorisation, which can limit deep comprehension and restrict practical application. Many students find it difficult to connect their theoretical knowledge of muscles with their practical significance in athletic performance, injury prevention, and rehabilitation. Moreover, there is a shortage of engaging educational tools that promote active recall and real-world usage. In response to these challenges, this project aims to create an innovative, interactive platform that closes the gap between theory and practice, encouraging a more profound understanding and enabling students to transfer their knowledge into real-world skills more effectively. Implementing interactive, game-based learning methods has been shown to enhance student engagement, improve memory retention, and facilitate the real-world application of anatomical concepts.

OBJECTIVES

This project aims to develop the Fit Fight Muscle Card Edition to assist students in learning, recalling, and applying knowledge of major human muscles and their functions.

The objectives are:

- i. To develop an engaging and effective tool for learning and retaining muscle names, locations, and functions.
- ii. To assess the game's educational impact on students' understanding and recall of muscular anatomy.

DESCRIPTION OF THE PROJECT

The game consists of two decks:

- Deck 1: Muscle Cards – 18 cards, each displaying a major muscle with its name and picture.
- Deck 2: Q&A Cards – cards containing a question or challenge related to the selected muscle (e.g., "What is the antagonist muscle?", "Demonstrate three (3) exercises for this muscle.").

Gameplay:

- i. A player draws one Muscle Card and one Q&A Card.
- ii. The player responds within 30 seconds.
- iii. Correct answers earn 1 point. Incorrect answers earn zero (0) and face punishment.
- iv. Play proceeds in turns for individuals or teams.

The game's functionality depends on its interactive design, which combines visual stimuli with targeted questions. The Muscle Cards act as visual anchors, helping players connect the names of major muscles with their functional and anatomical importance. The related Q&A Cards challenge players to recall specific details, thereby strengthening their understanding through active recall and problem-solving. The timed response feature (30 seconds) creates a cognitive pressure that encourages quick thinking and further enhances memory retention.

In terms of usefulness, this game provides several educational advantages. Firstly, it encourages active learning by requiring players to engage with anatomical concepts in a lively manner, contrasting with passive memorisation methods. The dual-card system promotes multisensory learning, namely visual recognition supported by verbal responses, catering to different learning styles. Additionally, the competitive or team-based format can motivate ongoing engagement, making the process of acquiring complex anatomical knowledge more accessible and enjoyable.

From a practical perspective, the game shows versatility and ease of implementation in educational or training environments. Its reliance on simple card decks makes it portable and adaptable to various group sizes and settings, from classrooms to fitness training sessions. The straightforward rules enable quick setup and minimal preparation, allowing facilitators to incorporate the game into curricula or workshops seamlessly.

Overall, this game serves as an effective educational tool that utilises visual and cognitive strategies to enhance understanding of muscular structure. Its interactive design increases engagement, retention, and application of anatomical knowledge, making it a practical and valuable resource for educators, trainers, and learners.



Figure 1 : Fit Fight Muscle Card Edition

NOVELTY

The product's novelty lies in its integration of immersive, gamified learning experiences with real-time application scenarios, specifically tailored for the human muscular system. Unlike traditional textbooks or simple digital quizzes, this game employs interactive simulations to create a highly engaging and personalised learning environment. It uniquely combines active recall techniques with practical, context-based exercises that enable students to directly link anatomical knowledge to athletic performance, injury prevention, and rehabilitation. This combination of inventive ideas and practical learning guarantees a more effective and memorable educational experience.

CONCLUSION

The *Fit Fight Muscle Card Edition* is an affordable, versatile educational resource suitable for various learning levels. It encourages active, peer-based learning, caters to multiple learning styles (visual, kinaesthetic, auditory), and makes studying anatomy engaging and purposeful.