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Literature Review Report

AI-integrated smith machine with energy harvesting module

Biofit Engineers

Friday February 7th , 2025

Abstract

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List of Abbreviations

|  |  |
| --- | --- |
| Abbreviation | Meaning |

# 

# Introduction and project description (Brunel & Dani)

# Overview of fitness equipment (Brunel, Yassine & Shaheed)

## Types of gym machines

## Topic #2

## Topic #3

## Topic #4

## Topic #5

# Biomechanical principles of muscle building (Yassine, Brunel & Shaheed)

## Overview

## Topic #2

## Topic #3

## Topic #4

# Injury prevention methods (Dani)

## Overview

# Demographics (Nwike)

## Beginner gym-goer outlooks and behaviours

## Intermediate gym-goer outlook and behaviours

## Advanced gym-goer outlook and behaviours

## Professionals and athletes outlooks and behaviours

# Energy harvesting methods in fitness equipment (Adrien)

## Method #1

## Method #2

## Method #3

# Sensors and electronics in gym machines (Adrien & Nwike)

# Form feedback algorithms (Nwike)

# Sustainability and the fitness industry (Dani)

# Ethics and regulations (Shaheed)

## Review of ethical considerations

## Technical standards and codes

# Market research (Brunel)

# Design criteria and restrictions (Whole team)

Table 5 lists some potential criteria for the future design, based on the preceding literature review.

Table : Preliminary design criteria, arranged by category and with references.

|  |  |  |  |
| --- | --- | --- | --- |
| Category | Design criteria | Value(s) | Ref. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# Conclusion (Brunel)

In conclusion, due to the broad scope of the proposed project description, the literature review explored all possible area of interest such as biomaterials, mechanical principles of fixation devices, monitoring technology and innovations in bone fracture healing.

# References

# Appendices