"Exploring the role of Artificial Intelligence in Physical Fitness : Can AI replace Human Experts? A Literature Review

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ABSTRACT

The aim of this research is to evaluate whether AI can effectively replace real-time expert supervision in monitoring individual exercise performance. To identify the research gap, the researcher reviewed 18 papers, extracting relevant data and organizing it into a table with columns for means and methods, sample, findings, and conclusions. Five key papers were analyzed in detail, revealing that AI can personalize training programs, effectively replace traditional technology, and enhance user convenience. However, despite these advancements, AI still lacks expert supervision and is not yet capable of fully replacing human trainers.

Keywords ***:*** Artificial Intellignece, Physical Fitness, Exercise, Human Exercise Expert.

Introduction

Following a healthy lifestyle has become more convenient with advancements in technology. However, maintaining a consistent workout routine remains a challenge for many individuals. As we know, fitness and exercise are crucial for both physical and mental well-being. Artificial Intelligence (AI) and Machine Learning (ML) have made it easier for people to design personalized training programs, addressing limitations where traditional methods failed to consider all aspects of personalization."

Despite having access to various mobile applications and fitness programs, many users struggle to follow a routine that meets their individual needs. Current fitness applications often fail to consider important factors such as body type, fitness level, and personal goals when designing workout plans. Generic workout programs may not effectively motivate users, leading to decreased engagement and lower adherence.

Personalization has become increasingly important, yet many existing applications fail to meet these needs. Additionally, without proper evaluation of workout routines, users risk performing exercises incorrectly, which can increase the likelihood of injury.

Most AI-driven fitness programs or applications primarily focus on designing workout plans without incorporating personalization or real-time feedback. However, there is a growing need for AI systems that can monitor fitness programs and provide real-time adjustments based on various parameters. This research explores whether AI can effectively replace real-time expert supervision in fitness training by offering personalized guidance and feedback

The aim of this research is to determine whether AI can effectively replace real-time expert supervision and monitoring of individual exercise performance

Literature Review

Exploration of various Research Articles- Data Extraction

1 Author & Year of the paper : (Imail Dergaa et al 2024)

Means and Methods : Objective : Assess the efficacy of GPT-4 in generating exercise prescriptions.

Method : GPT-4 was provided with details of five hypothetical patient profiles and tasked with generating 30-day exercise programs.

Evaluation Criteria : Programs were assessed by experts based on :

- Frequency, Intensity, Time, and Type (FITT principle)
- Perceived exertion levels
- Medication considerations
- Individualization for specific conditions

Sample : Five distinct scenarios representing hypothetical individuals with diverse health conditions and fitness goals.

Findings :

- GPT-4 created safe but overly cautious exercise plans.
- Programs prioritized safety over training effectiveness.

- Limited precision in tailoring programs for individual health needs.
- Lacked dynamic adjustments based on ongoing user feedback.

Conclusions :

- AI models like GPT-4 can serve as supplemental tools for individuals without access to professional guidance.
- AI is not yet suitable to replace expert-designed personalized programs.
- Future research should focus on real-time physiological feedback integration and interactive AI systems for improved adaptability.

2 ***Author & Year of the paper :*** Donghoon Shin, Gary Hsieh, and Young-Ho Kim, 2023

Means and Methods : Developed Plan Fitting, an AI-driven exercise planning system using Large Language Models (LLMs). The system collected user goals, availability, and obstacles to generate personalized exercise plans using IF-THEN rules. Evaluated with 18 users and reviewed by 3 expert planners.
Sample : 18 participants created personalized exercise plans, while 3 expert physical therapists assessed plan quality. Additional insights were gathered from 5 exercise planners and 8 clients

Findings : AI-generated plans were personalized and actionable but lacked exercise variety and expert-level customization. Experts rated plans above average in frequency, intensity, and time but noted improvements needed in exercise type selection

Conclusions : AI assists but cannot replace expert-designed programs. Future research should focus on real-time feedback, improved exercise recommendations, and dynamic adaptation

3 ***Author & Year of the paper :*** Chiam J,et al 2024

Means and Methods :Developed NudgeRank™, an AI-driven digital nudging system using Graph-Neural Networks (GNN) to personalize health interventions. The system collected user activity data, demographics, and program participation to generate tailored nudges. Evaluated with 84,764 participants in a 12-week public beta in Singapore

Sample : 84,764 participants received nudges, divided into two groups : 7,436 (only physical activity program - NSC) and 77,328 (both NSC and 4nutrition program - EDSH). A control group of 84,903 participants was matched for comparison. Engagement data was also collected from mobile app interactions.

Findings : AI-generated nudges increased daily steps by 6.17% (Group 1) and 2.2% overall, while MVPA increased by 7.61% (Group 1) and 2.7% overall. Nudge open rate was 13.1%, with 11.7% of opened nudges rated useful. MVPA-related nudges had a higher engagement rate (19.3%) than step-related nudges (8.7%). A dose-response effect was observed—participants who opened more nudges showed greater improvements in activity

Conclusions : AI-driven nudges effectively promote physical activity, particularly for less active individuals. However, AI alone cannot replace expert-designed interventions. Future research should explore real-time feedback, long-term habit formation, and integration with broader health strategies

4 Author & Year of the paper : Ilukpitiya, I et al 2024

Means and Methods : Developed an AI-driven fitness coaching system that personalizes workout and diet plans based on body type and provides real-time exercise feedback. The system uses CNN and YOLOv8 for body type classification, Random Forest Classifier for movement tracking, and BMR calculations with machine learning for dietary recommendations

Sample : The CNN model for body type identification was trained on a diverse dataset and achieved 87% testing accuracy. The exercise movement tracking system used 135,000 data points and reached 88% accuracy. The dietary recommendation system optimized meal plans with 85.32% accuracy

Findings : Personalized workout plans improved engagement and motivation.

- Real-time feedback system corrected exercise mistakes, reducing the risk of injury.
- BMR-based dietary recommendations improved adherence to nutrition plans.
- Users found the emoji-based feedback system useful for refining workout plans

Conclusions : The AI-driven system effectively personalizes fitness and nutrition plans, enhances exercise performance with real-time feedback, and improves user adherence. Future improvements should focus on AI accuracy,

expanding exercise databases, and enhancing long-term habit formation

5 ***Author & Year of the paper :*** Fang, J,

Means and Methods : Used Deep Reinforcement Learning (DRL) with the Asynchronous Advantage Actor-Critic (A3C) algorithm.

- Integrated IoT devices (smartwatches, fitness apps) for real-time monitoring of user exercise behavior.
- Evaluated exercise performance using the Fitness-Fatigue Model.
- Tested AI-based goal-setting across multiple datasets and simulated environments

Sample : Publicly available fitness datasets, Fitbit data, and sports logs.

Three study groups :

1. Simulated data : 50 users (walking steps, age range 17-64).
2. Open-source dataset : 11 users (perceived exertion levels).
3. Real-world study : 13 users (Fitbit-based running intensity tracking)

Findings :

- Personalized AI goal setting outperformed fixed goal strategies.
- Users stayed motivated longer and adhered better to exercise plans.
- Real-time AI adjustments helped prevent undertraining and overtraining.
- 4.31% improvement over traditional goal-setting methods.
- The model showed higher accuracy and adaptability compared to other ML models (DQN, PPO, ACKTR, GAIL)

Conclusions :

- AI-powered exercise goal setting enhances digital health services by adapting to user behavior dynamically.
- The system improves motivation, adherence, and fitness performance.
- Future research should focus on expanding datasets, real-world testing, and long-term engagement strategies

6 ***Author & Year of the paper :*** Liu et al. ()

Means and Methods :

Objectives : To develop a deep learning-based system to simulate and analyze infrared thermal images of athletes for accurate estimation of heat energy consumption during training.

Methods : Infrared thermal images of athletes under various training conditions were collected and processed using a CNN-based deep learning model. An enhanced fuzzy C-means image segmentation algorithm (NCI-FCM) was developed for detailed feature extraction and thermal data analysis. The simulation system includes a five-layer architecture that integrates video analysis, algorithm processing, and data visualization.

Sample : 400 training images and multiple video samples from athletes were used. Test scenarios included push-ups, pull-ups, and sit-ups with performance compared to manual counting.

Findings : 400 training images and multiple video samples from athletes were used. Test scenarios included push-ups, pull-ups, and sit-ups with performance compared to manual counting.

Conclusions : The developed system accurately simulates athletes' heat energy consumption using infrared thermal images and deep learning. It provides detailed insights for optimizing training strategies and supports real-time feedback and injury prevention. The system proves to be both reliable and efficient for varied athletic training environments.

7 ***Author & Year of the paper :*** Shuzhen Ma, Kim Geok Soh, Salimah Binti Japar, Simao Xu, Zhicheng Guo (2024)

Means and Methods :

Objectives : The study aimed to maximize the performance of badminton athletes through core strength training and to explore the potential of machine learning (ML) modeling in predicting athletic performance metrics such as stability, agility, and power.

Methods : The study employed Artificial Neural Networks (ANN) to model the relationship between core strength training and badminton performance. A comprehensive validation process was conducted, including data splitting into training, validation, and test subsets, along with k-fold cross-validation.

Sample : The study involved a sample of badminton athletes, although the exact number of participants is not specified in the provided citations.

Findings : The findings indicated that core strength training significantly enhances the performance of badminton athletes, particularly in terms of stability, agility, and power. The ANN models effectively predicted performance outcomes, demonstrating the potential of machine learning in sports training applications. The authors concluded that integrating core strength training can unlock the full potential of athletes and improve their overall performance in badminton

Conclusions : AI effectively personalizes training

8 ***Author & Year of the paper :*** R. Molavian, A. Fatahi, D. Khezri(2023)

Means and Methods :

Objectives : The paper aims to explore the applications of artificial intelligence (AI) and machine learning (ML) in sports performance analysis and gait analysis, identifying areas for further research and potential advancements in sport biomechanics

Method : The researchers conducted a systematic review of existing literature, categorizing studies based on various domains such as machine learning techniques, performance prediction, and gait analysis

Sample :The studies reviewed included various samples, such as :

- 1.27 male athletes (mean age 19±4.42 years) for aerobic fitness prediction
- 2.2015 Rugby World Cup data for comparing human and AI prediction abilities
- 3.65 males and 73 females (mean ages 15.9±0.4 years for males and 13.2±0.4 years for females) for performance modeling

Findings : AI techniques can effectively evaluate sports performance and provide quick feedback A basic CNN design yielded the highest performance in field sports analysis Curve-fitted data outperformed other data types in predicting aerobic fitness.

No significant evidence was found that humans could predict match outcomes more accurately than AI

Conclusions : The implementation of expert systems and neural networks in gait analysis signifies a notable advancement in sport biomechanics. The study highlights the potential of AI and ML techniques in sports and gait analysis, while also identifying unexplored areas for future research

9 ***Author & Year of the paper :*** Fatih Kaya (2025)

Means and Methods :

Objectives : The study aims to systematically review the existing literature on the effects of artificial intelligence technologies on physical education and movement development in children.

Methods : A systematic review was conducted using databases such as Google Scholar, PubMed, IEEE Xplore, SpringerLink, Web of Science, and Scopus. Keywords included 'artificial intelligence,' 'physical education,' 'movement development,' 'children,' and related terms. Data were categorized by performance, feedback mechanisms, and educational process improvements.

Sample : The sample consists of studies involving healthy and active child participants, focusing on the effects of AI technologies in physical education

Findings : The findings indicate that AI technologies can enhance physical education and movement development in children, with various studies highlighting improvements in motor skills and personalized learning experiences

Conclusions : The review concludes that integrating AI into physical education can significantly benefit children's movement development and educational outcomes, suggesting further exploration and implementation in curricula

10 ***Author & Year of the paper :*** Wang, Y., & Wang, X. (2024)

Means and Methods :

Objectives : The paper aims to explore the transformative role of artificial intelligence (AI) in physical education (PE), focusing on how AI can enhance teaching strategies, track student progress, and evaluate outcomes to improve the quality of PE. It also emphasizes the need for comprehensive teacher training in AI to effectively integrate these technologies into PE

Sample : 2015 Rugby World Cup data for comparing human and AI prediction abilities

Findings : The review identifies challenges in the evaluation of PE teaching methods and suggests that AI can enhance personalized health management services in PE. It also emphasizes the importance of interdisciplinary collaboration and technical training for effective AI implementation in sports

Conclusions : The authors conclude that AI has significant potential to improve physical education practices, but its implementation must be guided by ethical considerations and a focus on fairness and transparency. They recommend further research and collaboration to optimize AI applications in PE

11 Author & Year of the paper : Yu Yang (2024)

Means and Methods :

Objectives : To explore the application of AI-based sensor wearable devices in monitoring human health during sports activities.To evaluate the effectiveness of these devices in collecting physiological and motion data.To design and validate a smart health monitoring system for athletes.

Methods : Conducted a literature review on AI-integrated wearable sensors. Designed a wearable health monitoring system (WHMSHAR) integrating sensors (accelerometer, heart rate, temperature), Bluetooth communication, and a backend server. Performed experimental simulations and validation using AI algorithms for motion recognition.Developed algorithms (including CSVM-based models and Kalman filters) to analyze acceleration data and identify sports activity states.

Sample : While no human participant data was directly collected, the study simulated various human activities and states (walking, running, falling, jumping). Algorithms tested were benchmarked against known models (Juha Parkka and D.M. Karantonis).Sensor placement was experimented on different body parts (e.g., abdomen, hip) for robustness.

Findings : The AI-enhanced wearable devices accurately identified sports actions, with : Walking detection accuracy : 90% Cell step recognition : 94% Fall detection accuracy : 100% The designed system (WHMSHAR) effectively monitored : Acceleration Heart rate Body temperature Real-time feedback and alerts were successfully transmitted to smartphones and backend servers. Mobile resource usage was minimal (e.g., CPU load ≤ 6%).

Conclusions : Enhances training outcomes AI-based wearable sensor systems have significant potential for real-time sports health monitoring.They

enhance training efficiency, injury prevention, and health management. Future improvements should address : Data privacy Sensor comfort Integration with other health indicators (e.g., sleep, recovery tracking)

12 Author & Year of the paper : Ting Xu & Baghaei (2025)

Means and Methods :

Objectives : To investigate how artificial intelligence (AI), especially artificial neural networks (ANN), is transforming sports in

- Performance enhancement
- Fan engagement
- Strategic decision-making
- To analyse opportunities, challenges, and ethical considerations surrounding AI adoption in sports.
- To demonstrate how ANN and data analytics can predict and improve sports outcomes and management practices.

Methods : Conducted a systematic literature review from 2010 onwards using databases like EBSCO, ProQuest, and Google Scholar. Developed and trained a shallow feedforward Artificial Neural Network (ANN) model with :Single hidden layer (5 neurons), Sigmoid activation function, Gradient descent optimization, 1000 epochs with early stopping, Used input variables : Data analytics, enhanced performance Output variables :

Sample : Used simulated data from literature and experimental sports scenarios

Findings : NN model showed high predictive accuracy, with less than 1% error. Combining AI and data analytics produced significantly better results than using analytics alone : Performance and management improved most when AI use exceeded 50%, Data-driven decision-making saw a notable boost with AI integration. Demonstrated real-world AI applications : Injury prediction & prevention, Real-time performance monitoring, Fan experience personalization, Talent scouting and recruitment

Conclusions : AI is a transformative force in modern sports, improving both on-field performance and off-field management. ANN and AI tools enable : Predictive insights, Personalized training, Enhanced fan experiences, Challenges remain around ethics, algorithmic bias, data privacy, and accountability. Responsible and strategic implementation of AI is critical for sustainable growth in sports.

13 Author & Year of the paper : Sumner et al. (2023)

Means and Methods :

Objectives : The paper aimed to systematically review AI-supported technologies in physical rehabilitation, focusing on :

- The availability of AI applications in physical rehabilitation.
- Their clinical effectiveness compared to standard care.
- The barriers and facilitators to their implementation in real-world settings.

Methods : Conducted a systematic review using PRISMA guidelines. Databases searched : MEDLINE, EMBASE, CINAHL, CIRRIE, Web of Science, OpenGrey. Included studies with machine learning (ML) applications tested in clinical or real-world rehabilitation settings. Excluded validation-only studies or those not used by actual patients.

Sample : ANN modeled outcomes across three domains : performance, management, and decision-making

Findings :

- AI Solutions Categorized as :App-based systems, Robotic devices (to replace or restore function), Gaming systems, Wearables
- Clinical outcomes were inconsistent : Some interventions showed benefits in mobility, pain, and quality of life., Others lacked strong evidence due to small sample sizes or high risk of bias.
- Barriers Identified : Low tech literacy (especially among older adults), Unreliable hardware, Usability issues, Lack of personalization/context-awareness, Poor real-world validation
- Enablers Identified : Increased access to care, Reduced manpower costs, Remote monitoring, Autonomy

Conclusions : AI has potential to enhance physical rehabilitation by improving accessibility, personalization, and efficiency.However, few high-quality, real-world clinical evaluations exist. Future efforts should focus on rigorous evaluation, participatory design, and addressing implementation barriers.

14 Author & Year of the paper : Pereira Rosa (2024)

Means and Methods :

Objectives : To explore the potential of AI in enhancing participation and inclusion in physical exercise and sports for individuals with disabilities.To address public health concerns related to inactivity among people with disabilities and identify barriers to physical activity.To discuss the ethical implications and future trends of AI in promoting accessibility and fairness in sports.

Methods : The paper is a narrative review, synthesizing various studies and articles related to AI, physical activity, and disability. It examines advancements in assistive technologies and the historical context of disability inclusion in sports.

Sample :The review discusses findings from various studies and articles but does not specify a particular sample size or demographic, as it is a narrative review.

Findings : Personalized training routines and performance monitoring can be facilitated through wearable devices.Ethical concerns regarding data privacy and algorithmic bias must be addressed to ensure equitable access to AI technologies.AI has the potential to significantly improve autonomy and participation for individuals with disabilities in sports.

Conclusions : AI presents significant opportunities to create a more inclusive sports environment for individuals with disabilities.Ongoing efforts are necessary to address challenges related to accessibility and ensure that AI technologies are developed with ethical considerations in mind.

15 Author & Year of the paper : Gao (2024)

Means and Methods :

Objectives : To develop and apply AI-based image recognition algorithms to analyze human movement in sports. To use visual image processing and deep learning to improve human health monitoring, injury prevention, and training outcomes. To optimize the Artificial Bee Colony (ABC) algorithm for enhanced sensor-based motion tracking and recognition.

Methods : Image processing pipeline includes motion image acquisition, preprocessing, feature extraction, and classification using AI algorithms. Integration of ABC algorithm with computer vision to improve motion tracking.

Use of shape descriptors, invariant moments, and similarity metrics for object detection and classification. Employed LSTM (Long Short-Term Memory) neural networks for motion trajectory prediction. Developed a robotic simulation model using ADAMS and MATLAB to evaluate motion and response timing.

Sample : The study is simulation-based, not using real human participants. Data includes simulated multimedia image sequences of human or object movements (e.g., ball trajectories). Simulation settings for robotic arm interactions and motion prediction serve as the test environment.

Findings : The improved ABC algorithm with multidimensional update strategies shows faster convergence and better optimization performance than traditional methods. The proposed image recognition framework accurately identifies posture and movement using visual features and AI models. LSTM models outperformed physical models in predicting nonlinear trajectories, especially under uncertain friction and force conditions. The robotic model using image predictions successfully executes motion based on AI-estimated targets with good accuracy.

Conclusions : AI image algorithms can enhance sports performance analysis and health monitoring. Optimized ABC algorithms and deep learning methods can improve real-time movement tracking, reduce injury risks, and personalize training. The integration of vision systems with robotic models shows promise in sports automation and interactive training.

Further development should focus on real-world validation, data expansion, and integration into wearable or mobile systems.

16 Author & Year of the paper : Wu et al. (2025)

Means and Methods :

Objectives :

- To develop a virtual game-based sports training platform powered by artificial intelligence.
- To use optical tracking and deep learning for real-time human motion capture and analysis.
- To enhance training effectiveness, personalization, and engagement through an immersive virtual environment.

Methods : Integration of optical tracking technology with AI algorithms to monitor and analyze athlete motion.

- Use of wearable devices (e.g., sleeves with fiber optic sensors) to capture elbow/knee joint movements.
- Design of motion signal acquisition, image decoding, and motion data fusion algorithms.
- Kalman filtering and dynamic noise covariance tuning for motion data accuracy.
- Use of virtual reality interaction for real-time feedback during training sessions.

Sample : Experimental simulation using volunteers wearing smart sleeves for elbow and knee monitoring.

- Motion scenarios included various straight and curved path movements at different speeds (500–1500 mm/s).
- Optical markers and dynamic scanning systems were evaluated.

Findings : Data fusion significantly improved tracking accuracy, with RMSE dropping to ~0.23–0.34 mm.

- The proposed method maintained high decoding accuracy even at steep camera angles (up to 80°).
- Jitter tests showed robustness, though performance dropped at high jitter; better than conventional methods.
- The virtual training platform successfully provided real-time feedback and interaction.
- System lag was acceptable, though slightly more noticeable at high speeds.

Conclusions : The AI-based system combining optical tracking, sensor fusion, and virtual gaming enhances :

- Motion analysis
- Training personalization
- Athlete engagement
- It offers a non-contact, immersive, and accurate method for physical training and injury prevention.
- The system supports real-time monitoring, personalized feedback, and improved sports performance.

- Optical tracking and AI offer promising future applications in rehabilitation, sports education, and interactive fitness.

17 Author & Year of the paper : Xizhi Wu, et al (2025)

Means and Methods :

Objectives : This review explores the landscape of AI in precision nutrition, evaluating methods, targeted diseases, datasets, evaluation metrics, and cultural factors. It aims to identify common patterns, gaps, and future research directions in the field.

Methods : A scoping review was conducted based on PRISMA-ScR guidelines. Databases such as PubMed, Scopus, Web of Science, IEEE Xplore, and others were searched using keywords related to AI, precision nutrition, and NLP. 198 studies from 2014 to 2024 were selected through multi-phase screening and thematic analysis.

Sample : The review included 198 research articles spanning multiple diseases (e.g., diabetes, cardiovascular disease, cancer), and covered 142 publication venues. Over 122 unique datasets were analyzed, with a significant portion focusing on open-access data.

Findings : AI is widely used in health optimization, disease prevention, and management. Most common methods included conventional AI, ensemble learning, and neural networks. Diabetes was the most frequently targeted disease. Key challenges include lack of public datasets, fragmented data sources, and underrepresentation of minority and cultural factors.

Conclusions : AI is transforming precision nutrition, with potential for personalized healthcare. However, the field needs better dataset accessibility, greater inclusion of cultural and minority considerations, and further exploration of underrepresented diseases.

18 Author & Year of the paper : H.S. Lee and J.L.(2021)

Means and Methods :

Objectives : To explore the principles and applicability of artificial intelligence (AI) in physical education (PE), and to analyze how AI can be used for customized classes, knowledge delivery, student evaluation, and counseling. The study also aims to outline the skills and roles future PE teachers need to effectively apply AI.

Methods : A conceptual and literature-based review approach was used. Databases like Google Scholar and RISS were searched without restrictions using keywords such as artificial intelligence, machine learning, deep learning, education, PE, and customized education. The study analyzed AI principles and their applications to PE based on selected literature.

Sample :The study is conceptual and did not involve empirical sampling or data collection from participants. It focused on previous research and theoretical applications of AI in educational settings, specifically PE. - AI enables learner-centered, personalized PE experiences using real-time data and sensory input.

Findings :

- AI applications can improve feedback, motivation, and skill tracking in PE.
- Teachers' roles must evolve from knowledge deliverers to facilitators and counselors.
- Integration of AI can reduce inequality in knowledge access and support emotional and academic development.

Conclusions : AI holds strong potential to transform PE by promoting individualized education, automating assessments, and enabling virtual learning experiences. Future PE teachers must be equipped with technological, evaluative, and emotional skills to work effectively with AI systems. While the conceptual foundation is strong, future empirical studies are needed to validate the actual impact of AI in PE.

Discussion

Times have changed, things have become more convenient, and in this tech-savvy world, there is heightened news of Artificial Intelligence (AI) everywhere. As we all know, AI has made a grand entry. But is Artificial Intelligence truly an alternative to humans? Let's try to find this out using some research backed data.In this research, the researchers wanted to explore various uses of AI in the field of physical fitness. Through this exploration, it was identified that traditional technology has been taken over by AI. However, in the end, it was found that AI is still not capable of replacing human expertise where physical fitness is concerned.

To provide an overall background of the research, the researcher explored various papers in the field of AI and physical fitness. Here are five review papers from the study :

1. A study conducted by Ismail Dergaa et al. (2024) designed a hypothetical training plan for health issues like BP and hypertension and evaluated it with experts. It was identified that AI focused too much on safety while overlooking other parameters.

2. A study conducted by Donghoon Shin, Gary Hsieh, and Young-Ho Kim (2023) developed a unique app called PlanFitting, which customizes training programs based on user input. It is a very effective application; however, it lacks a variety of exercises which maybe needed for individuals to keep up their motivation and allow them to continue workout and not allow the body to get resistant.

3. A study conducted by Chiam J. et al. (2024) measured whether fitness nudges improved steps and other fitness parameters. AI-driven nudges were able to improve performance but could not replace expert-designed interventions.

4. A study conducted by Ilukpitiya I. et al. (2024) designed a training program and diet plan considering body image, providing real-time exercise feedback after uploading images. It effectively measures and prepares fitness plans and diet recommendations.

5. A study conducted by Fang J. examined and designed an AI-based personalized software that sets goals considering individual motivation and other parameters, adjusting them accordingly. The system improves motivation and fitness performance.

All the above literature reviews highlight one common aspect : AI has assisted and simplified physical fitness by designing personalized training programs, setting goals, developing AI-based applications, and improving fitness. However, due to the lack of expert supervision, AI fails in various aspects such as variety, motivation levels, and understanding human emotions. It is not yet ready to replace expert supervision.

Conclusion

AI has assisted and simplified physical fitness by designing personalized training programs. However, it lacks expert supervision and is not yet ready to replace humans

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