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**Changemakers:  
Creativity and Value  
Creation (A2)**

**Tutor: Andrew Thomas**

1. Produce a contemporary idea that will change how the sports sector interacts and or engages with the world. This could be something new or something applied in a different context. You need to consider the rationale and justification of the idea within 1000 words of referenced material.

Patients on dialysis, or those with chronic kidney disease (CKD), bear heavy psychological and physical loads that frequently lower their quality of life. Exercise on a regular basis has been demonstrated to be essential for enhancing health outcomes and reducing the negative effects of CKD. But the demands of their treatment plan limit the traditional workout alternatives offered to dialysis patients. Dialysis treatments, which last for many hours, make it difficult to move around, and the presence of complex medical equipment means that creative ways to encourage exercise are required. This essay explores the necessity of creating a workout tool that requires little upkeep and is specifically designed to meet the demands of individuals undergoing dialysis. Through an analysis of the reasoning, validation, and possible consequences of this invention, we investigate ways to improve the wellbeing and participation of of dialysis patients in the sporting community.

Patients on dialysis have a variety of obstacles that make it difficult for them to exercise regularly. Patients' movement and liberty are severely limited by the time-consuming nature of dialysis treatments, which are frequently administered three times a week and take several hours per session. Research has demonstrated that dialysis patients get treatment for a significant amount of the week, which leaves little time for other activities, such as exercising (Johansen & Painter, 2012; Tentori et al., 2010).

In addition, the existence of medical equipment—such as catheters, dialysis machines, and monitoring devices—presents serious obstacles to conventional types of exercise. Throughout their treatment, patients are required to be attached to these devices, which restricts their freedom of movement and prevents them from participating in activities requiring equipment that is incompatible with their medical environment (Miller et al., 1999; Fitts et al. al. (2000).

These limitations worsen the sedentary lifestyle that dialysis patients frequently exhibit, which can result in a variety of health issues such as decreased quality of life, deconditioning of the cardiovascular system, and muscular atrophy (Painter et al., 2000; Wu et al., 2004). There is an urgent need for creative solutions that allow dialysis patients to participate in physical activity safely and effectively, given the well-established benefits of exercise in improving cardiovascular health, muscle strength, and overall well-being in CKD patients (Heiwe & Tollbäck, 2004; Koufaki et al., 2015). There is great potential for improving the general health and quality of life of dialysis patients through the creation of a low-maintenance exercise equipment. Such an invention has the potential to completely transform the way that treatment is provided in the sports industry by addressing the particular issues that this group faces.

First off, there are several physiological advantages to incorporating exercise into the dialysis environment. Research has indicated that physical activity during dialysis sessions can enhance general physical performance, cardiovascular fitness, and muscular strength (Painter et al., 2000; Miller et al., 1999). Additionally, studies on dialysis patients have shown that regular exercise lowers blood pressure, medication use, and hospitalisations; these data emphasise exercise's potential to reduce CKD complications and enhance clinical outcomes (Miller et al., 1999; Fitts et al., 2000).

In addition, including exercise into the dialysis regimen might have significant psychological advantages in addition to physiological ones. Studies on dialysis patients have demonstrated that physical activity improves mood, lessens symptoms of anxiety and sadness, and raises general quality of life (Wu et al., 2004; Tentori et al., 2010). An exercise gadget customised for a patient's needs might contribute to their sense of empowerment and control during therapy sessions, promoting their sense of well-being.

The idea is to include low-maintenance exercise techniques, such as resistance bands, grip strengtheners, low-intensity yoga/stretching, meditation, and personal training during dialysis treatments, into the life of dialysis patients. These tactics provide individualised methods for attending to patients' medical and psychological requirements (Heiwe & Tollbäck, 2004; Koufaki et al., 2015). By encouraging patient engagement and adherence to exercise programmes, this technology improves therapy delivery efficiency and fits perfectly with current workflows in dialysis centres. This patient-centered approach emphasises comprehensive treatment customised to each patient's requirements, reflecting larger developments in healthcare (Heiwe & Tollbäck, 2004; Koufaki et al., 2015).

Furthermore, addressing the difficulties dialysis patients encounter—such as lengthy treatment sessions and limited mobility—highlights the significance of low-maintenance exercise options (Johansen & Painter, 2012; Tentori et al. (2010)).

Studies reveal that include exercise in dialysis sessions lowers blood pressure, medication use, and hospital stays while simultaneously enhancing cardiovascular health, muscular strength, and general well-being (Painter et al., 2000; Miller et al., 1999; Fitts et al., 2000). Exercise improves mood, lowers anxiety and sadness, and improves dialysis patients' quality of life on a psychosocial level (Wu et al., 2004; Tentori et al., 2010).

The invention might greatly enhance the health and care experiences of dialysis patients by attending to these complex demands, opening the door for revolutionary developments in the sports sector and other fields.

The efficient and effective administration of care can be improved by reducing logistical constraints and promoting patient participation through the use of low-maintenance exercise devices in dialysis centres. Therefore, incorporating exercise into the dialysis context has great potential to enhance patient outcomes and transform treatment in the sports industry.

#### Reference List:

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- Tentori, F., Elder, S. J., Thumma, J., Pisoni, R. L., Bommer, J., Fissell, R. B., ... & Robinson, B. M. (2010). Physical exercise among participants in the Dialysis Outcomes and Practice Patterns Study (DOPPS): correlates and associated outcomes. *Nephrology Dialysis Transplantation*, 25(9), 3050-3062. Accessed on Sunday, March 24th, 2024.
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- Wu, A. W., Fink, N. E., Marsh-Manzi, J. V., Meyer, K. B., Finkelstein, F. O., Chapman, M. M., ... & Powe, N. R. (2004). Changes in quality of life during hemodialysis and peritoneal dialysis treatment: generic and disease specific measures. *Journal of the American Society of Nephrology*, 15(3), 743-753. Accessed on Thursday, March 28th, 2024.
- Heiwe, S., & Tollbäck, A. (2004). Effects of regular resistance training on muscle histopathology and morphometry in elderly patients with chronic kidney disease. *American Journal of Kidney Diseases*, 43(5), 76-83. Accessed on Saturday, March 23rd, 2024.
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**2. Create a mind map (with your idea in the centre) that demonstrates how the ideas and concepts covered within the Units of the module are interconnected and how they contributed to the development your project idea.**

## Resistance Bands

An adaptable and portable choice for strength training activities is resistance bands. Resistance band activities can help individuals with chronic kidney disease (CKD) develop muscle strength without the use of heavy weights or machines.



A simple, low maintenance and affordable piece of equipment that all dialysis patients could use to help improve their grip strength while receiving treatment.

## Grip strengtheners



## Personal training



Personal training could be applied to dialysis patients either through an in person session or through pre recorded video training. Patient requirements, both physical and psychological, can be uniquely met by personal training while undergoing dialysis.



## Meditation

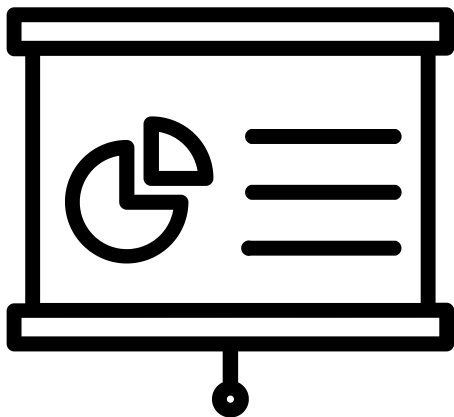
Concentrating attention on the here and now while developing a relaxed, aware state is the goal of mindfulness meditation. During dialysis treatments, patients with chronic kidney disease (CKD) can practise mindfulness meditation techniques including deep breathing, body scans, and guided imagery to promote emotional well-being and lessen tension, worry, and discomfort.

## LOW MAINTENANCE METHODS OF EXERCISE FOR CKD PATIENTS

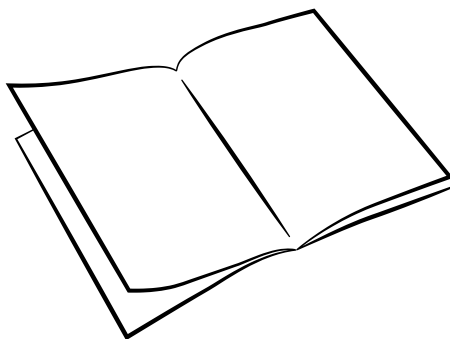


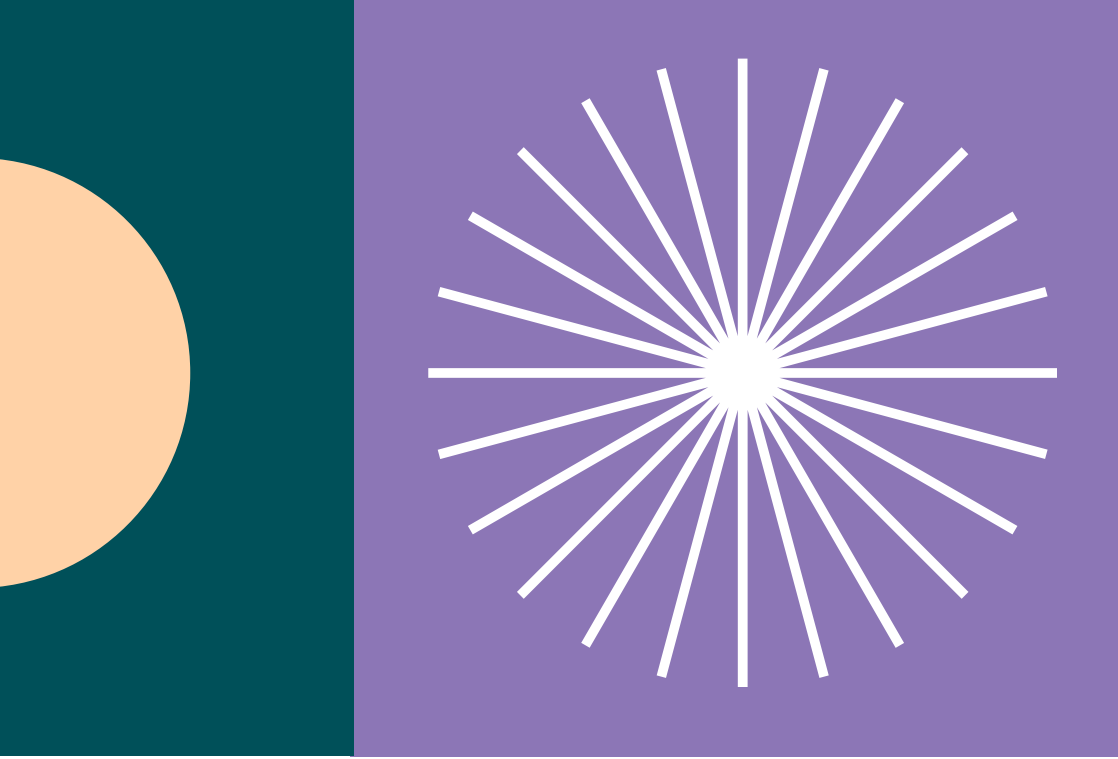
## low intensity stretching/yoga

Simple stretches and movements practiced while receiving treatment could be beneficial to a dialysis patient's health and well-being. YouTube channels such as Jefferson Health provide simple stretching exercise routines for bed/chair bound patients which would be beneficial for dialysis patients.



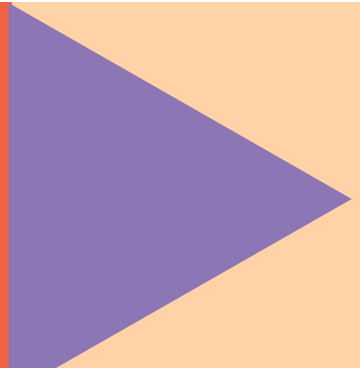
**3. Design a 4 page booklet that will market your idea to your target audience. The booklet needs to be professionally presented using appropriate online software during its creation.**





# **LOW MAINTENANCE METHODS OF EXERCISE FOR CKD PATIENTS**

By Finley  
McGrath



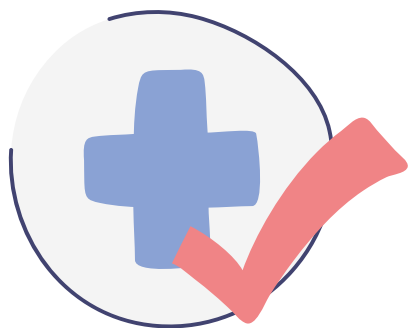


# INSPIRATION

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## Design Thinking: Practical Applications

This concept originated from a very personal place, based on personal experience of seeing a loved one deal with the difficulties associated with chronic kidney disease (CKD). Motivated by the experience of a family member battling chronic kidney disease, the idea to create low-maintenance fitness programmes for patients receiving dialysis became a heartfelt project. After seeing the restrictions and difficulties that come with treating chronic kidney disease (CKD), there was a strong desire to lessen the burdens that patients and their families had to bear. Inspired by compassion and a deep feeling of duty to better the lives of those with chronic kidney disease, the idea to pioneer fitness programmes and initiatives for dialysis patients came to be.



## 1 THE PROBLEM

Regular exercise is difficult for dialysis patients because of time-consuming treatment sessions and movement restrictions from medical equipment (Johansen & Painter, 2012; Tentori et al., 2010)

## 2 IDEATE SOLUTIONS

From the academic research conducted i felt it was necessary to research different equipment and methods that would allow dialysis patients to be more involved in fitness despite the circumstances they face.

# THE FOUR STEP

## APPROACH

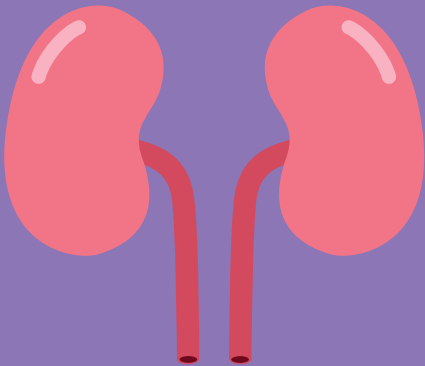
## 3 COLLABORATION AND PARTNERSHIP

To promote these ideas it is important to secure collaborations with charities that want to support and nurture patients of CKD. It is of personal belief that this idea should be brought towards Kidney Care Uk as they are the UK's leading kidney patient support charity (2024).

## 4 PROTOTYPE AND TEST

We can test and prototype our low-maintenance fitness programme for patients with chronic kidney disease (CKD) undergoing dialysis with the help of charity partnership. Patient recruitment for the pilot phase will be facilitated via collaborations with healthcare providers. During dialysis, participants will follow exercise regimens, which will enable us to evaluate the programmes' viability and efficacy. Feedback from surveys and user input will help programmes be improved for wider adoption, which will benefit CKD patients in all communities.

**“EVEN IN THE FACE  
OF ADVERSITY, WE  
CAN STILL SEIZE  
EVERY  
OPPORTUNITY FOR  
GROWTH.” –  
(MALALA  
YOUSAFZAI, 2013)**



Malala Yousafzai's remark represents possibility and resilience in relation to CKD and fitness solutions. Patients with chronic kidney disease (CKD) can nevertheless thrive by using specialised workout methods. Including low-maintenance options validates our faith in resiliency and promise in the face of difficulty.