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Review of the Application of HAPA Theory in Orthopedic Postoperative Patients

Jiani Liang[†], Shengnan Liu[†], Huamei Yu, Ye Tian, Hongtao Guo*

Affiliated Hospital of Inner Mongolia Medical University, Hohhot 010000, Inner Mongolia Autonomous Region, China
[†]These authors contributed equally to this work.

***Corresponding author:** Hongtao Guo, hongtaoguonm@163.com

Abstract: The Health Action Process Approach (HAPA), developed by German psychologist Schwarzer in the 1980s, provides a comprehensive framework for understanding and influencing health behavior change. By dividing behavior change into three dynamic stages—pre-intention, intention, and action—HAPA highlights the critical role of self-efficacy as a driving force in adopting healthier behaviors. This stage-based approach addresses the limitations of continuous health behavior models by emphasizing individual differentiation and recognizing that behavior change is not linear but progresses through distinct phases. HAPA theory has demonstrated significant potential in clinical applications, particularly in orthopedic postoperative patients. Its implementation facilitates the development of positive behavioral intentions, enhances self-efficacy, and supports sustained health action, ultimately improving patients' health outcomes and quality of life. Tailored interventions based on HAPA stages ensure that patients receive appropriate guidance and support throughout their recovery journey. Despite its successes, limitations remain. Future research should focus on expanding the application of HAPA to various orthopedic conditions and developing more targeted behavioral plans and health education programs to optimize patient rehabilitation. Additionally, further exploration is needed to sustain HAPA's effectiveness during long-term recovery. Strengthening interdisciplinary collaboration and integrating HAPA with other theoretical models could create a more comprehensive health behavior education system, providing robust support for orthopedic patients and advancing their overall recovery and well-being.

Keywords: Health Action Process Approach; Application; Orthopedic; Review

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1. Introduction

Health Action Process Approach (HAPA) is a health behavior theory developed by German psychologist Schwarzer in the 1980s, based on the "self-efficacy" model [1]. This theory conducts an in-depth exploration of health behaviors, dividing health behavior change into three dynamic stages: pre-intention, intention, and action [2]. HAPA emphasizes

the critical importance and driving role of self-efficacy in fostering health behavior change [3]. By tailoring intervention measures to an individual's stage of behavior change, HAPA promotes healthier behavioral intentions, thereby addressing the limitations of continuous health behavior models. Specifically, HAPA acknowledges individual differentiation and highlights that behavior change is not a continuous process but unfolds in distinct stages. Its clinical application encourages patients to develop positive intentions and maintain health actions.

2. Basic framework of HAPA theory

2.1. Theoretical basis

The HAPA theory draws primarily from Bandura's self-efficacy theory [4], which asserts that an individual's belief in their ability to successfully perform a behavior is a key determinant of behavior change. According to HAPA, self-efficacy significantly impacts both the initiation of new behaviors and the ability to overcome obstacles during the maintenance phase, ultimately ensuring sustained healthy behavior changes. HAPA also incorporates elements of social cognitive theory [5], which considers behavior change a complex interplay of cognitive, emotional, and social factors. Social cognitive theory posits that behavior is influenced not only by internal cognition and emotions but also by the social environment and interactions. Integrating these principles, HAPA emphasizes the importance of health risk perception—such as recognizing the harm caused by inactivity or an unhealthy diet—as the first step toward behavior change. The model stresses the need for individuals to believe in their capacity for change, create actionable plans, and act with the support of social and environmental factors. This comprehensive approach makes HAPA a robust framework for explaining and promoting health behavior change [6].

2.2. HAPA theory: Stages of healthy behavior change

2.2.1. Pre-intention stage

This initial stage is critical for initiating health behavior change. During this phase, individuals have not yet formed a concrete determination to act but begin contemplating health-related issues. The pre-intention stage comprises three core elements: danger perception, outcome expectation, and action self-efficacy. Firstly, danger perception refers to an individual's awareness of health risks, which may arise from physical discomfort, medical diagnoses, health education, or social comparisons. This awareness can prompt individuals to consider whether action is necessary to improve their current state. Secondly, outcome expectation plays a pivotal role in fostering a willingness to change behavior. It involves anticipating positive outcomes, such as alleviating discomfort, restoring function, or enhancing quality of life. These anticipated benefits motivate individuals to adopt new health behaviors. Lastly, action self-efficacy is the individual's confidence in their ability to perform healthy behaviors and achieve desired results. This confidence often stems from peers' successful experiences, encouragement from others, and personal optimism about achieving goals. These three factors—danger perception, outcome expectation, and action self-efficacy—interact synergistically to ignite an individual's initial willingness to adopt healthy behaviors. When sufficiently developed, these factors enable the transition to the next stage: the intention stage, where individuals begin planning specific health actions [7].

2.2.2. Intention stage

At this stage, individuals have a clear intention to act but have not yet taken action. They prepare specific steps (action plans) for behavior change and develop strategies (coping plans) to address potential challenges.

Action self-efficacy continues to provide motivation, while coping self-efficacy—the confidence to overcome difficulties—empowers individuals to persist despite obstacles. Upon initiating these actions, individuals transition to the action stage.

2.2.3. Action stage

Individuals actively implement healthy behaviors based on their behavior plans. However, they are likely to encounter various challenges and obstacles that may lead to intentions or actions of giving up. In such situations, restoring self-efficacy becomes critical. This involves helping individuals regain or maintain confidence through strategies such as successful experiences, vicarious experiences, verbal encouragement, emotional regulation, and goal breakdown. By strengthening self-efficacy, individuals are more likely to sustain or restore healthy behaviors, thereby achieving long-term behavioral change. **Figure 1** shows the theoretical framework of HAPA.

HAPA theory provides a robust theoretical foundation for promoting health behavior change and has demonstrated a wide range of applications, particularly in clinical practice. Its application in postoperative orthopedic patients has shown significant results.

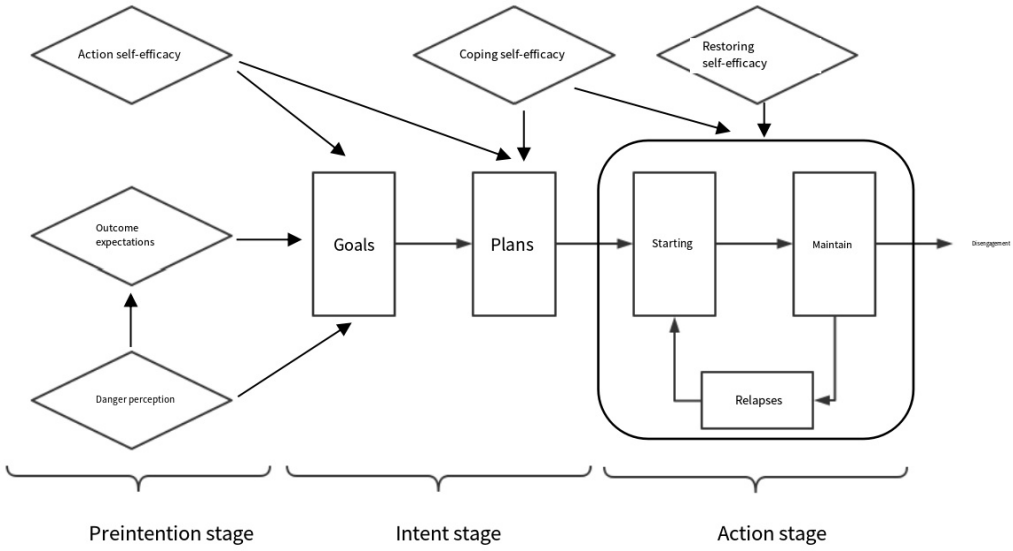

Figure 1. Theoretical framework of HAPA

3. Application of HAPA theory in orthopedic postoperative patients

3.1. Patients with femoral neck fracture after artificial hip replacement

Kou *et al.* [8] innovatively integrated the HAPA model with phased rehabilitation nursing strategies, conducting in-depth research specifically on the rehabilitation process of elderly patients with femoral neck fractures undergoing unilateral artificial hip replacement. They refined the journey of patients' health behavior transformation into four key stages: pre-intention, intention formation, action planning, and actual action implementation. Results demonstrated that phased rehabilitation care based on the HAPA model alleviated movement fear and improved hip function. Targeted interventions at different behavioral stages significantly enhanced exercise compliance, self-efficacy, and mental well-being, reducing anxiety and depression while improving rehabilitation outcomes. This approach provides a clear, systematic framework for nursing teams to evaluate patients' mental states and

behavioral changes, enhancing the precision and effectiveness of care. Li and Huang [9] explored the application of HAPA-based menu nursing in elderly patients undergoing total hip replacement. Their findings revealed that HAPA-guided interventions effectively improved psychological states and hip function recovery, optimizing patients' quality of life and rehabilitation outcomes. Additionally, Bai [10] developed a perioperative rehabilitation nursing plan for elderly patients based on the HAPA model. Results showed the program significantly promoted hip function recovery, gait stability, self-care ability, and pain and anxiety relief in elderly patients undergoing hip replacement.

3.2. Patients with lumbar disc herniation accompanied by sciatica

Scholars [11] developed a HAPA-based rehabilitation program for patients with lumbar disc herniation and sciatica. Using literature review, group discussions, and Delphi expert consultations, the program was tested in clinical trials. Findings revealed that HAPA-guided interventions effectively bridged the gap between knowledge and action, improving adherence to functional exercises, alleviating anxiety and depression, and enhancing self-efficacy. These improvements significantly contributed to achieving satisfactory rehabilitation outcomes.

3.3. Patients after lower extremity fracture surgery

Wang *et al.* [12] implemented an intervention based on the HAPA theory for 91 patients following lower limb fracture surgery, comparing the results with a control group of the same size that received standard postoperative care. Through detailed observation and data collection, the study found that patients receiving HAPA-guided intervention showed significant improvements in mental health, quality of life, and disease awareness compared to the control group. Specifically, these patients demonstrated a more positive attitude when facing rehabilitation challenges post-surgery and adapted more effectively to daily life. Moreover, they gained a deeper and more comprehensive understanding of their condition. This finding not only validates the effectiveness of HAPA theory in rehabilitative interventions for lower limb fracture patients but also provides substantial evidence and guidance for future clinical practice in related fields.

3.4. Individualized health education for patients after orthopedic surgery

The individualized health behavior change program, based on the HAPA theory, enhances health behavior and self-efficacy in patients after orthopedic surgery, promoting postoperative rehabilitation [9]. This program offers tailored guidance at different stages of health behavior, helping patients establish healthy living habits and improve their overall quality of life.

3.4.1. Evaluation and individualized formulation

During the initial stage of admission, when patients are in the pre-intention phase, the HAPA model aids in improving their cognition and motivation toward postoperative health behavior change [13]. After surgery, with changes in their personal beliefs and support from the medical team, patients transition into the intention or action phase. At this stage, patients' needs vary based on factors such as age, gender, type of surgery, and physical condition. The application of the HAPA theory requires a comprehensive assessment of the patient, including their physical function, psychological state, social support, and other aspects. This assessment can be conducted through questionnaires or interviews, allowing the HAPA program implementation team to create a personalized rehabilitation plan based on the results. This individualized approach ensures the safety and effectiveness of the

rehabilitation process, helping patients better adapt to rehabilitation and improving the overall outcome.

3.4.2. Improvement of self-efficacy and confidence

HAPA theory underscores the significance of self-efficacy in driving health behavior change [14]. By offering positive feedback—such as providing patients with rehabilitation knowledge, sharing success stories, offering professional guidance, and establishing behavioral contracts—patients' self-efficacy and motivation to adopt healthy behaviors can be enhanced. This improvement in self-efficacy encourages active participation in behavioral plans, which, in turn, leads to better rehabilitation outcomes. Moreover, by cooperating more effectively with the team's behavioral plan, patients can take an active role in their recovery. In the early stages of orthopedic postoperative rehabilitation, many patients, due to prior trauma, may have misconceptions or a lack of understanding about exercise. They may worry about the negative impact of physical activity or feel anxiety, depression, or fear, leading them to resist engaging in exercise. This fear of physical activity can hinder rehabilitation, so it is crucial to focus on boosting patients' self-efficacy and confidence to help them overcome these challenges.

3.4.3. Developing and executing an action plan

HAPA theory emphasizes that, in health behavior management, the team and the patient should collaboratively create a specific action plan, which includes setting health behavior change goals, selecting methods, and developing training schedules [15]. This cooperative process deepens patients' understanding and engagement with their health behavior change following orthopedic surgery and enhances the individualization and effectiveness of the plan. A key component is the creation of a detailed and flexible action plan, which serves as the foundation for implementation. The next step is to outline the schedule, specifying the content, intensity, frequency, and duration of daily or weekly exercises, as well as a clear timeline for behavior change, ensuring each step progresses toward the stated goal. This plan should be adjusted according to the patient's health behavior stage, physical responses, or other circumstances. While encouraging patients to actively participate in the behavior change training to ensure the plan's successful implementation, it is also important to emphasize that patients should take ownership of their own behavior change process. Over time, they should learn self-management and self-motivation, actively seeking help when facing difficulties. The implementation team should continue to provide support through regular check-ins, phone calls, or online communication, addressing any questions and offering necessary guidance.

3.4.4. Improving compliance

Based on the HAPA theory, the personalized action plan for orthopedic postoperative patients should not only consider their specific circumstances and needs but also incorporate small goal-setting and positive feedback. These elements, along with educational strategies and implementation support, help enhance patients' self-efficacy. This can be achieved through methods such as sharing success stories and role-playing exercises, which improve patients' confidence and their ability to complete and adhere to the action plan [16]. HAPA theory also underscores the importance of social support in behavior change. Therefore, in the postoperative recovery phase, the involvement of the patient's family and friends is crucial. Encouraging active communication between patients and the HAPA team provides emotional support and practical help when difficulties arise. Pain is often a significant barrier to patient compliance after orthopedic surgery [17], so effective pain management strategies—such as medication, physical therapy, and psychological intervention—are essential. By reducing pain, these strategies can

improve patients' participation and compliance in health behavior change.

3.4.5. Action control and supervision

In the transition from intention to action, HAPA theory also highlights the role of action control in health behavior change [18]. To ensure sustained and effective behavior change, patients must continuously monitor their own actions, while the implementation team provides external supervision of individual behaviors [19]. To support this, the team must establish a systematic and efficient feedback and evaluation mechanism. This mechanism should focus on regular, comprehensive assessments of patients' progress. It involves not only the collection and analysis of objective data, such as the number and duration of rehabilitation exercises and functional recovery levels, but also subjective feedback, including patient satisfaction, pain self-assessments, and changes in mental state. By combining both subjective and objective information, the implementation team can identify effective strategies and obstacles in the behavior change process, enabling them to make necessary adjustments. Additionally, encouraging patients to engage in self-monitoring and record-keeping enhances their autonomy and participation. Recording their behavior change journey allows patients to visualize their progress, adjust their strategies when faced with challenges, and find solutions that work best for them. This ability to self-manage and self-adjust plays a crucial role in facilitating postoperative rehabilitation and improving patients' overall quality of life.

4. Limitations

While the HAPA theory has demonstrated significant potential in promoting health behavior change in orthopedic postoperative patients, there are still several limitations and challenges. These include the need for long-term follow-up observations and effect evaluations, as well as the relatively limited application of HAPA theory in orthopedic postoperative care. In conclusion, while the application of HAPA theory in the rehabilitation of orthopedic patients post-surgery holds great promise, it must be further refined to better address individual differences and the dynamic nature of the rehabilitation environment. This would enhance the theory's adaptability and effectiveness in diverse clinical settings.

5. Conclusion and prospects

The application of HAPA theory in orthopedic postoperative patients has yielded impressive results, improving not only the health status of patients but also enhancing their self-efficacy and quality of life [20]. Looking ahead, the application of HAPA theory should be expanded to encompass a broader range of orthopedic conditions post-surgery. Developing more targeted behavioral plans and health education programs will provide more effective support for patients' rehabilitation. Furthermore, in-depth discussions are needed regarding the theory's role in long-term recovery and the importance of interdisciplinary collaboration. Combining HAPA with other theoretical models and approaches will contribute to a more comprehensive and robust health behavior change education system, ultimately optimizing patient recovery and well-being.

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