

SIGNIFICANT EFFECT OF PATH-TYPE FUNCTIONAL EXERCISE IN ORTHOPEDIC REHABILITATION NURSING CARE

Ji ZHU¹, XIAOYAN ZHAN^{2,*}

¹Sport College, Henan University, Kaifeng 475001, China - ²International Education College, Henan University, Kaifeng 475001, China

ABSTRACT

Objective: This study aimed to observe and analyze the effect of path-type functional exercise in orthopedic rehabilitation nursing care.

Methods: A total of 800 cases in the Department of orthopedics, who received treatment in our hospital from August 2013 to October, were selected as research subjects in this study. All patients had the right to sign related informed consent. Then, they were randomly divided into the research and control groups, with 400 cases in each and different nursing models. The conventional nursing model was applied in the control group, while path-type functional exercise was added for the research group based on that. The overall treatment effective rate, complication rate, various rehabilitation conditions (bed leaving time, fracture healing time, joint function recovery time, and hospital stay time), overall nursing satisfaction, exercise compliance, knowledge acquisition standard, psychological status scores, and specialized theoretical test scores for nurses after nursing in both groups were observed and measured, respectively.

Results: Through different models of rehabilitation nursing, the overall treatment effective rate in the research group was significantly higher than that in the control group ($P < 0.05$). Comparisons of various rehabilitation conditions and investigation of nursing satisfaction showed that the research group had an obvious advantage ($P < 0.05$). Comparison of exercise compliance, knowledge acquisition standard, psychological status scores, specialized theoretical test scores for nurses displayed a more distinct advantage in the research group than the control group ($P < 0.05$). Besides, the complication rate in the control group was higher than that in the research group ($P < 0.05$).

Conclusion: Path-type functional exercise applied in the period of rehabilitation nursing for orthopedic patients has an ideal efficiency, being not only able to provide preferred nursing service but also promote treatment effects. Therefore, path-type functional

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Introduction

Today, as technology development is changing people's lifestyles, patients with orthopedic disease in hospitals also tend to increase. A fracture refers to the complete or partial rupture of bone or its structure. It can occur in any age group, commonly in children and aged people and occasionally in young and middle-aged people⁽¹⁾. Patients usually have a fracture in one site, and few undergo multiple fractures. Many patients can recover fully with timely and suitable treatment; however, some patients may also suffer different sequelae.

Clinical symptoms of a fracture include systemic manifestation and local manifestation. In the former (when there is multiple, pelvic (Fig. 1), femoral (Fig. 2), and spinal fractures (Fig. 3), patients often suffer from a shock induced by visceral injury due to numerous soft tissues damage, bleeding, pains⁽²⁾, and high body temperature due to massive bleeding and hematoma absorption in the fractured sites. The latter involves deformity, abnormal movement, bony crepitus, or bone friction.

Clinical researches have suggested that path-type functional exercise applied in the period of rehabilitation nursing for orthopedic patients has

an ideal efficacy and promotes the rehabilitation process. Therefore, this study investigates whether path-type functional exercise in orthopedic rehabilitation nursing care has a significant effect.



Figure 1: Pelvic fracture.



Figure 2: Femoral fracture.



Figure 3: Spinal fracture.

Materials and Methods

General information

A total of 800 patients in the Department of orthopedics, who received treatment in our hospital from August 2013 to October, were selected as research subjects in this study. All cases had the right to sign related informed consent. There were 187 cases with a limb fracture, 245 with a hand

fracture, 198 with a spinal fracture, and 170 with a pelvic fracture. The subjects were randomly divided into the research and control groups, with 400 cases in each. In the research group, there were 256 males and 144 females, aged between 22 and 70 years (average age of 44.7 ± 3.4 years). In the control group, there were 223 males and 177 females, aged between 20 and 68 years (average age of 45.8 ± 3.6 years). The general information for patients in both groups showed comparability, with $P > 0.05$.

Methods

The conventional nursing model was applied in the control group. The model included serious monitoring of vital signs, regular assessment of the fracture recovery condition, accurate medication guidance, drug usage recoding, and proper limb exercise recommendation⁽³⁾.

Based on the conventional rehabilitation nursing, path-type functional exercise was applied for patients of the research group as followings:

- The conduction of path-type functional exercise needs a good basis. That is, nursing workers should have grasped the concept of the nursing pathway in detail and actively participate in the related formulation process of the performance table about path-type functional exercise for orthopedic patients to fully ensure the smooth realization of clinical nursing⁽⁴⁾. Moreover, regular training should be performed to enhance the professional quality and nursing skill level of nurses.

- Operative and conservative treatments were applied for orthopedic patients. Therefore, during the formulation process of the performance table about path-type functional exercise, the treatment needs should be fully considered and combined to form the performance plan of specific and individual path functional exercise. Simultaneously, the communication with a doctor in charge should be strengthened to ensure the reasonability of path-type functional exercise⁽⁵⁾.

- Medical staff should carefully and rigorously assess patients' conditions on the day in the hospital. Active and effective measures should be taken timely if patients had rough symptoms and intense pains.

- Psychological nursing guidance was used. Orthopedic patients often had unhealthy psychological emotions, such as tension, fear, unrest, and anxiety, possibly affecting the treatment compliance and efficacy. Therefore, nurses should communicate with them warmly to disperse the passive emotions and establish a positive treatment mentality⁽⁶⁻⁷⁾.

- Before performing a path-type functional exercise, nurses should inform patients about the disease in detail, as well as specific data, purpose, necessity, and efficacy of path-type functional exercise to enhance the trust⁽⁸⁻⁹⁾.

- During the exercise, nurses should not only ask patients to take strict exercise content to correct the exercise improper way and behavior but also assist them in coordinating the exercise time and give them certain positive encouragements⁽¹⁰⁾.

- While performing a path-type functional exercise, nurses should record the relevant training in detail to avail the evaluation of body functional recovery status⁽¹¹⁾.

- On the duty shift, nurses should also make a good work exchange to ensure that path-type functional exercise is performed smoothly and effectively⁽¹²⁾.

Observation indexes

After the observation and comparison of both groups following rehabilitation nursing, the obtained overall treatment effective rate (evident effectiveness, effectiveness, and ineffectiveness), complication rate, various rehabilitation conditions (bed leaving time, fracture healing time, joint function recovery time, and hospital stay time), overall nursing satisfaction, exercise compliance, knowledge acquisition standard, psychological status scores, and specialized theoretical test scores for nurses were observed and measured.

Statistical methods

SPSS21.0 statistical software was used for the data process. Also, ($\bar{x} \pm s$) was applied for data measurement, (n, %) for data enumeration, and t-test and chi-square test for intergroup comparison. $P < 0.05$ was considered statistically significant.

Results

Comparison of overall treatment effective rate and complication rate in both groups

According to Table 1, after nursing, the overall effective rate in the research group was significantly higher than that in the control group ($P < 0.05$), and the research group had a lower complication rate ($P < 0.05$).

Comparison of various rehabilitation conditions

According to Table 2, the rehabilitation

conditions in the research group had an obvious advantage compared with those in the control group ($P < 0.05$).

Group	Evident effectiveness	Effectiveness	Ineffectiveness	Overall effective rate	Complication rate
The research group (n = 400)	202 (50.50)	178 (44.50)	20 (5.00)	380 (95.00)	30 (7.50)
The control group (n = 400)	105 (26.25)	209 (52.25)	86 (21.50)	314 (78.50)	98 (24.50)
χ^2 -value				12.36	10.47
P-value				<0.05	<0.05

Table 1: Comparison of overall treatment effective rate and complication rate in both groups [n (%)].

Group	Bed leaving time (d)	Fracture healing time (d)	Joint function recovery time (d)	Hospital stay time (d)
The research group (n = 400)	5.25 ± 2.12	90.39 ± 21.05	178.73 ± 43.52	11.15 ± 3.74
The control group (n = 400)	7.98 ± 2.21	118.67 ± 32.52	257.49 ± 46.32	20.08 ± 4.21
t-value	14.08	15.47	22.36	8.75
P-value	<0.05	<0.05	<0.05	<0.05

Table 2: Comparison of various rehabilitation conditions ($\bar{x} \pm s$).

Comparison of exercise compliance, knowledge acquisition standard, psychological status scores, and specialized theoretical test scores for nurses

According to Table 3, other indexes and specialized theoretical test scores for nurses showed a more distinct advantage in the research group than the control group ($P < 0.05$).

Group	Exercise compliance (%)	Knowledge acquisition standard (%)	Overall nursing satisfaction (%)	Psychological status scores (mark)	Specialized theoretical test scores for nurses (mark)
The research group (n = 400)	380 (95.00)	368 (92.00)	394 (98.50)	30.25 ± 12.16	94.25 ± 4.36
The control group (n = 400)	302 (75.50)	262 (65.50)	285 (71.25)	68.99 ± 14.15	80.28 ± 5.53
χ^2 -value	12.35	16.46	18.27	20.43	15.36
P-value	<0.05	<0.05	<0.05	<0.05	<0.05

Table 3: Comparison of exercise compliance, knowledge acquisition standard, psychological status scores, and specialized theoretical test scores for nurses.

Discussions

There are many fracture types (Fig. 4), which can occur at any age group. It takes a long time to be healed due to many factors (Table 4)⁽¹³⁻¹⁴⁾. The slow fracture healing not only affects patients' normal life and work but also increase the psychological burden. Thus, an active and effective path functional exercise nursing model applied for patients and persisted correct function exercise following a doctor's advice could positively affect fracture healing⁽¹⁵⁾.

Path function exercise applied during the orthopedic rehabilitation nursing should be conducted strictly according to the performance table. Specific, continuous, and systemic nursing is conducive to effectively proceed a comprehensive and in-depth guide to the functional training for orthopedic patients⁽¹⁶⁻¹⁷⁾. During the nursing, rigorous assessment of patients' joint function recovery condition, the implementation of functional exercise

at the corresponding stage, and the assurance of functional exercise intensity meeting the treatment at the corresponding stage are beneficial to reduce the bed leaving, fracture healing, joint function recovery, and hospital stay times. Furthermore, the path functional exercise model enables patients to deeply understand their joint recovery conditions. Because of the concurrent of the functional exercise effect and that of expected, it also can help patients establish the confidence of healing disease, enhance the treatment compliance, and promote the rehabilitation process.

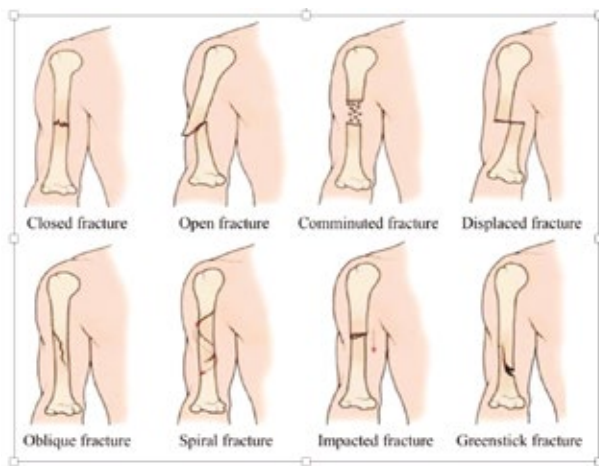


Figure 4: Fracture types.

Factors affecting fracture healing
1. Patient age: Fracture healing in children (because of active growth) is faster than in adults. For instance, femoral shaft fracture in the newborn can be strongly healed in about half a month, while that often takes 2-3 months in adults;
2. Blood supply in fracture sites: It is another important factor deciding the speed of fracture healing;
3. Infection influence;
4. Soft tissue embedding;
5. Influences on healthy condition;
6. Degree of soft tissue injury;
7. Influences on treatment methods.

Table 4: Factors affecting fracture healing.

Conclusions

It is concluded that during the rehabilitation nursing process of orthopedic patients, the addition of path functional exercise could have an ideal efficacy. The exercise not only provides preferred nursing service and promotes the treatment effect but also decreases the hospital stay time and helps patients obtain high life quality as soon as possible. Therefore, path functional exercise used in

orthopedic rehabilitation nursing shows a significant effect, worthy of being promoted in the practical nursing work.

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Corresponding Author:

XIAOYAN ZHAN

Email: zhanxiaoyan2018@126.com

(China)