IQWiG Reports – Commission No. N16-03

Motor-driven continuous passive motion (CPM) devices after interventions in the knee and shoulder joint[1]

Extract

[1] Translation of the key statement of the final report N16-03 *Einsatz von motorbetriebenen Bewegungsschienen (CPM) nach Interventionen am Knie- oder am Schultergelenk* (Version 1.1; Status: 23 July 2018). Please note: This document was translated by an external translator and is provided as a service by IQWiG to English-language readers. However, solely the German original text is absolutely authoritative and legally binding.

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This report was prepared in collaboration with external experts.

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Key statement

Research question

The aim of this report is to

- assess the benefit of the (at-home) application of motor-driven continuous passive motion (CPM) devices as part of conservative treatment or after knee or shoulder surgery

with regard to patient-relevant outcomes in comparison to no treatment, to sham treatment, or treatment with any comparator intervention without CPM that meets clinical standards.

Conclusion

This benefit assessment is based on a total of 35 analysed studies on 7 research questions in which CPM was investigated either as an adjunct to or replacement of physical therapy. Among them were 7 studies on 2 indications at the shoulder (1 research question on shoulder stiffness; 2 research questions on rotator cuff rupture) and 28 studies on 3 indications at the knee (1 research question each on intra-articular knee fracture and rupture of the anterior cruciate ligament; 2 research questions on total knee endoprosthesis). The analysed studies contained results on the outcomes range of motion, physical functioning status, pain, repeat intervention, health-related quality of life, and adverse effects. Overall, there was a hint or indication of benefit regarding some outcomes for 2 of the 7 research questions.

As regards the outcomes physical functioning status, repeat intervention, health-related quality of life, and adverse events, no hint of benefit or harm was found for any of the 7 research questions. Usable results on health-related quality of life were available for only 1 research question (CPM as an adjunct to physical therapy in patients with total knee endoprosthesis). Regarding the results on adverse events, in 6 out of 7 research questions (exception: intra-articular knee fracture), it was unclear whether these had been collected systematically and reported completely.

Shoulder stiffness: CPM versus physical therapy

Three studies were available on this research question. In all 3 studies, CPM was used as part of a conservative treatment approach and likely in an outpatient setting. For the outcome pain, there was an indication of greater benefit of CPM versus physical therapy for the indication shoulder stiffness. For the outcome range of motion, there was no hint of benefit or harm.

Rotator cuff rupture: CPM versus physical therapy

Two studies were available on this research question. The CPM device was used post-operatively, likely in a domestic setting. Beyond the outcomes mentioned above, the outcomes range of motion and pain also showed no hint of benefit or harm of CPM compared to physical therapy in the postoperative treatment of rotator cuff rupture.

Rotator cuff rupture: CPM plus physical therapy versus physical therapy alone

Two studies were analysed on this research question. The CPM device was used post-operatively, apparently initially in an inpatient setting and later in a home care setting. Beyond the outcomes mentioned above, the outcomes range of motion and pain also showed no hint of benefit or harm of CPM as an adjunct to physical therapy compared to physical therapy alone in the postoperative treatment of rotator cuff rupture. No data were available on repeat interventions.

Intra-articular knee fracture: CPM with physical therapy versus physical therapy alone

One study was available for investigating the research question. The CPM device was used postoperatively in an inpatient setting. Beyond the outcomes mentioned above, the outcome range of motion also showed no hint of benefit or harm of CPM treatment as an adjunct to physical therapy when compared to physical therapy alone in the indication intra-articular knee fracture.

Knee, rupture of the anterior cruciate ligament: CPM plus physical therapy versus physical therapy alone

Three studies were available on this research question. The CPM device was used post-operatively in an inpatient setting, and in two studies, also in the subsequent outpatient follow-up treatment. Beyond the outcomes listed above, the outcomes range of motion and pain also showed no hint of benefit or harm in the indication rupture of the anterior cruciate ligament. There were no usable data on physical function.

Total knee endoprosthesis: CPM versus physical therapy

Two studies were available on this research question. The CPM device was used post-operatively, in an inpatient setting in one study and in a home care setting in the other. Beyond the outcomes mentioned above, the outcomes range of motion and pain also showed no hint of benefit or harm of CPM treatment as an adjunct to physical therapy when compared to physical therapy alone in the indication total knee endoprosthesis. There were no usable data on physical function.

Total knee endoprosthesis: CPM with physical therapy versus physical therapy alone

Twenty-two studies were analysed on this research question. The CPM device was used postoperatively. For the outcome range of motion, there was a hint of greater benefit of CPM in combination with physical therapy versus physical therapy alone, given daily CPM use for more than 6 hours. This benefit statement is based on the results in the inpatient setting during early knee flexion. For daily CPM use for up to 6 hours, there is no hint of benefit or harm. The same applies to the outcomes physical function, pain, repeat interventions, and health-related quality of life.

CPM versus sham treatment and no active intervention

No studies were available for investigating this research question.

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