

## Game Ready Injury Treatment System

Health Technology Brief

Updated: October 2013

Game Ready injury Treatment System, also known as Game Ready Accelerated Recovery System, was previously reviewed by L&I's Office of the Medical Director in 2009. There was no published peer reviewed literature demonstrating Game Ready or similar devices to be superior to existing alternatives, including rest, ice and compression, for treatment of edema and pain following orthopedic surgery. Active and passive cooling and compression devices for home use remained non-covered for treatment of edema and pain due to musculoskeletal injury or following surgery since last review.

Recently two randomized controlled trials (RCT) on Game Ready System were reviewed in detail in response to a request from the manufacturer. One study (Su et al., 2012) compared Game Ready to ice with static compression for function recovery, pain and edema reduction in post-operative patients. The other study compared Game Ready to ice alone for function recovery, reduction in pain and edema, and health status. The key findings are summarized in Table 1.

In the first study, no difference was found between the two treatments throughout the study in all primary outcomes, including range of motion, knee girth, the six minute walk test (6MWT), the timed up and go test (TUG) and pain (VAS). As a secondary outcome, narcotics use in the first two weeks post-operation was lower in the Game Ready group compared to the control, however the difference diminished after the first 2 weeks. It is unclear if the dosage difference was clinically significant, especially since there was no difference found in pain scores (VAS) between groups.

The other study (Waterman et al., 2012) compared Game Ready to ice alone. The results of this study do not address the comparative effectiveness of Game Ready to the standard of care (RICE) due to the use of ice alone as comparator. Though VAS for Game Ready group decreased significantly at week 6 post-operation compared to the baseline, it was significantly higher than the score of the control group ( $P = 0.01$ ) at the baseline, indicating the existence of patient selection bias. In addition, no difference was detected in other primary outcomes including pain and function (the Lysholm and SANE scores), health status (SF-36), or edema either between groups or between time points. More importantly, the study had some serious limitations, including small sample size, high non-compliance rates and significant baseline difference in pain scores between the two groups.

In conclusion, there is not sufficient evidence to support coverage of the Game Ready Injury Treatment System. Specifically, evidence on effectiveness and cost-effectiveness of this treatment compared to the standard of care: rest, ice, compression and elevation (RICE) is weak or unfavorable.

**Table 1. Summary of key findings from the primary studies**

| Author and Study Design  | Patient Population  | Treatment/Outcome Measures  | Results  | Conclusions Limitations Quality   |
|--|---|---|--|---|
| <p>Su, et al (2012). A prospective, multi-center, randomized trial to evaluate the efficacy of a cryopneumatic device on total knee arthroplasty recovery. The Journal of Bone and Joint Surgery 94-B, Supple A:153-6</p> <p>RCT</p> | <p>N= 294. Patients who had total knee arthroplasty were randomized to treatment with Game Ready or ice with static compression at 11 international sites. 187 patients completed the study (103 received Game Ready treatment and 84 patients with ice and compression).</p> | <p>Patients were randomized to treatment with Game Ready or ice with static compression. Both treatments were initiated within three hours post-operation and used at least four times per day for two weeks.</p> <p>Range of motion (ROM), knee girth, six minute walk test (6MWT) and timed up and go test (TUG) were measured pre-operatively, two- and six-weeks post-operative. Pain (VAS) and narcotic consumption were also measured</p>                               | <p>There was no significant difference in the primary outcomes (ROM, 6MWT, TUG, or knee girth) between the 2 groups.</p> <p>There was no difference in VAS between the groups throughout the study. A lower amount of narcotic consumption (509 mg vs. 680 mg morphine equivalents) was found at the first two weeks post-operation in the Game Ready group (<math>p &lt; 0.05</math>). However, the difference diminished after week 2. There was a significant difference in the satisfaction scores of patients with their cooling regimen, with greater satisfaction in Game Ready group (<math>p &lt; 0.0001</math>). There was no difference in adverse events or compliance between the two groups.</p>   | <p>Game Ready is not superior to ice with static compression bandage in ROM, 6MWT, TUG, knee girth or VAS. Though there was greater satisfaction in patients treated with Game Ready system, there was no difference in compliance between the two groups.</p> <p>Quality of the study: good.</p>                   |
| <p>Waterman et al (2012). The effect of combined cryotherapy and compression compared with cryotherapy alone following anterior cruciate ligament reconstruction. The Journal of Knee Surgery 25 (02) 155-160</p> <p>RCT</p>         | <p>N=36. Patients with age 18 to 65 undergoing ACL reconstruction were randomized to two groups (1:1)</p>   | <p>Treatments: 1. Game Ready; 2. a standardized ice pack. Patients were treated three times per day, and returned to the clinic at 1, 2, and 6 weeks postoperatively.</p> <p>Outcome measurements: Pain (VAS), Knee pain and function (the Lysholm knee score and single assessment numerical evaluation [SANE]), and health status (SF-36). Circumferential measurements of the knee obtained at three locations. Narcotic medication use was recorded by questionnaire.</p> | <p>By week 6 post-operation, VAS for Game Ready group decreased significantly, whereas no significant change of VAS was detected for the control group. However, VAS for Game Ready group was different from the control group significantly (54.9 vs.35.6, <math>P = 0.01</math>) at the baseline, indicating the existence of patient selection bias.</p> <p>No significant difference was detected in the Lysholm, SF-36, or SANE scores either between groups or between time points. Furthermore, no significant difference was detected for any of the circumferential measurements either between groups or time points. Of all patients, 83% of Game Ready group discontinued narcotic use by 6 weeks, compared with 28% of the control group (<math>p = 0.0008</math>).</p> | <p>There was insufficient evidence to make any conclusion.</p> <p>Limitations: 1. Compared to ice alone, not RICE (rest, ice, compression and elevation); 2. Small sample size; 3. Significant difference of VAS of the two groups at the baseline; 4. Low compliance rates.</p> <p>Quality of the study: poor.</p> |



## References

1. Su, et al (2012). A prospective, multi-center, randomized trial to evaluate the efficacy of a cryopneumatic device on total knee arthroplasty recovery. *The Journal of Bone and Joint Surgery* 94-B, Supple A:153-6
2. Waterman et al (2012). The effect of combined cryotherapy and compression compared with cryotherapy alone following anterior cruciate ligament reconstruction. *The Journal of Knee Surgery* 25 (02) 155-160