



ValidationInstitute

2021 Validation Report

Review for: SWORD Health

Validation Achieved: Level 2 - Outcomes

Valid through July 2022



Company Profile



SWORD HEALTH

Category:	Musculoskeletal Management
Website:	swordhealth.com/
Public or Private:	Private
Year Established:	2014
CEO:	Virgílio Bento

Description:

SWORD Health is the world's fastest growing virtual musculoskeletal (MSK) care provider, on a mission to free two billion people from chronic and post-surgical pain. The company's clinical-grade virtual therapy platform pairs expert physical therapists with FDA-listed wearable technology to deliver a personalized treatment plan that is more effective, easier and less expensive than traditional physical therapy. **SWORD Health** believes in the power of people to recover at home, without resorting to imaging, surgeries or opioids. Since launching in 2015, **SWORD Health** has worked with insurers, health systems and employers in the U.S, Europe and Australia to make quality physical therapy more accessible to everyone.





Claim Assertion for Validation

SWORD Health offers patients who have had total hip arthroplasty and total knee replacement post-surgery rehabilitation via a digital app. Patients who have low back pain patients can use a SWORD Health digital program. The apps use artificial intelligence to give patients physiotherapy services, without having face-to-face visits. Patients using the app can achieve outcomes comparable to conventional care, and by using the app, reduce the need for in-person visits. Because the program is digital, patients can follow the treatment plan more easily than a conventional care plan. Better adherence can lead to better results and lower costs ultimately.





Method / Calculation / Examples

- **Hip study:**

Sixty-six patients were split into two groups – one using Sword Health and one using conventional (in-person) care. Everyone was measured before his surgery, during the 4 – 8 weeks after surgery, and then again 3 to 6 months after surgery. The measures were the Timed Up and Go test [1], which measures how long a person takes to rise from a chair, walk three meters, turn around, walk back to the chair, and sit down; the Hip dysfunction and Osteoarthritis Outcome Scale (HOOS) [2], which asks the patient about his ability to do various activities, quality of life, and perception of pain; and the hip range of motion (ROM), which is tested by the medical provider.

The two groups' improvement in these measures was compared to gauge whether one group performed differently than the other.



- **Knee study:**

Sixty-nine patients were allocated to two groups – one using Sword Health and one using conventional care. Fifty-nine patients ultimately completed the study protocol. The primary outcome measured was the Timed Up and Go test (described above) at baseline, and at eight weeks, 12 weeks (three months), and 26 weeks (six months) after surgery. Another measure used was the Knee Injury and Osteoarthritis Outcome Score (KOOS) [3], which is similar to the HOOS scale described above but for the knee. The two groups had similar starting scores.

- **Low back pain study:**

Thirty-two patients diagnosed with low back pain and assessed to be high-risk for surgery were assigned to the program. Participants received wearable sensors and on average, had 42 AI-led exercise sessions during the 12-week period. A Physical Therapist monitored their progress. The analysis measured the participants adherence to the program.

Findings & Validation

Hip study: The group assigned to the Sword Health program had better improvement at each of the time points than the conventional care group on the Timed Up and Go test. On the HOOS test, Sword Health patients did better on the sports and Quality of Life components. They also did better on the range of motion tests, except for one component (standing flexion).

Knee study: The usual care and the Sword Health groups improved on their TUG and KOOS scores enough to be considered clinically significant. The Sword Health group had significantly more improvement than the conventional care group on both tests at all of the post-surgery assessments with the exception of one component of the KOOS test (sports).

Low-back pain: Sixty-three percent of the participants adhered to the program. This compares favorably to adherence to traditional physical therapy programs for low back pain, for whom adherence can range from 30% to 86%, varying with how adherence is defined and how many weeks treatment lasts. Patients tend to drop out the longer that treatment lasts. (Jack & al, 2010) [4]



Works Cited

1. Timed Up and Go test
https://en.wikipedia.org/wiki/Timed_Up_and_Go_test
2. Hip dysfunction and Osteoarthritis Outcome Scale (HOOS)
<http://www.koos.nu/HOOSEng.pdf>
3. Knee Injury and Osteoarthritis Outcome Score (KOOS)
<https://www5.aaos.org/uploadedFiles/KOOS.pdf>
4. Jack, K., & al, e. (2010). Barriers to treatment adherence in physiotherapy outpatient clinics: A systematic review. *Manual Therapy* , 220 - 228.



Limitations

For the hip and knee analyses, patients were assigned to the Sword Health program or to conventional care based upon the patient's nearness to medical services. Those who were farther away were assigned to the program. This may make the two groups different in ways that cannot be measured and may skew the results.

In the knee study, a larger portion of patients in the Sword Health group dropped out of care, compared to the usual care group; 21% of intervention group dropped out versus 7% of usual care group. This may make the results more favorable for the intervention group than they would be otherwise.

For all three analyses, participants voluntarily joined the program and may be different from the general population.



Validation and Credibility Guarantee

SWORD Health's Digital Platform achieved level 2 validation for Outcomes. Validation Institute is willing to provide up to a \$25,000 guarantee as part of their Credibility Guarantee Program. To learn more, visit <https://validationinstitute.com/credibility-guarantee/>

Level 1 – Savings

Can reduce health care spending per case/participant or for the plan/purchaser overall.

Level 2 – Outcomes

Product/solution has measurably moved the needle on an outcome (risk, hba1c, events, employee retention, etc.) of importance.

Level 3 – Metrics

Credible sources and valid assumptions create a reasonable estimate of a program's impact.

Level 4 - Contractual Integrity

No outcomes or savings has been shown, but vendor is willing to put a part of their fees "at risk" as a guarantee.





Validation Expiration: July 2022

CERTIFICATE OF VALIDATION

Applicant:

SWORD Health

New York, New York 10018, US

Product:

Sword Health Digital Platform

Claim:

Better adherence can lead to better results and lower costs ultimately.

Validation Achieved:

Level 2 - Validated for Outcomes

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About Validation Institute

Validation Institute is a professional community that advocates for organizations and approaches that deliver better health value - stronger health outcomes at lower cost. We connect, train, and certify health care purchasers, and we validate and connect providers delivering superior results. Founded in 2014, the mission of the organization has consistently been to help provide transparency to buyers of health care.