

# Just Add Water

Combining water and land-based therapy in the same session improves outcomes.

BY RICK MCAVOY, PT, DPT, CSCS

**T**wo therapies can sometimes be better than one. Such is the case with aquatic therapy. Numerous articles and research studies have espoused the benefits of aquatic exercise.<sup>1-4</sup> However, many clinicians only use aquatic therapy as a last resort when land-based therapy is intolerable or unsuccessful. Therapists who combine water and land exercise may only apply them on alternate treatment days or in different stages of the rehabilitation process.

However, combining both treatment mediums in the same session can improve outcomes and reduce discomfort during rehab.

I recently completed a research study that compared aquatic and land-based therapy on outcomes for total knee arthroplasty. The study was performed on 30 subjects who underwent a unilateral total knee replacement; participants were divided into two groups of 15. One group performed a 60-minute land-based exercise program of open and closed chain exercises and manual therapy. The other group performed a 60-minute exercise program divided into 30 minutes of aquatic exercise immediately followed by 30 minutes of land-based exercise.

Both groups followed similar treatment protocols and exercises were timed to ensure equal treatment amounts. Each group received treatment for 12 sessions over 6 weeks. The study used an outcome index and looked at measurements of pain, range of motion (ROM) and swelling.

After 6 weeks the integrated group demonstrated a statistically significant improvement in knee ROM compared with the land-based group. Pain and swelling measurements and outcome scores didn't favor either group. However, during a 6-month outcome follow-up, the integrated group reported a statistically significant improvement in symptom reduction. The improved ROM in the integrated group after discharge may have promoted long-term symptom reduction.

I developed this study based on my own clinical experiences. I work in a large outpatient orthopedic and sports medicine clinic that houses a static therapeutic pool. We have a successful aquatic therapy program and our referring orthopedic surgeons are educated about the benefits of aquatic exercise. I've found that many diagnoses and patient populations benefit from

an integrated protocol. Consider the following examples.

- **Total knee replacement.** Our facility uses a combined approach from day one for total knee replacement patients. We evaluate the patient on land for the first 30 minutes to obtain objective measurements and ensure a comprehensive home exercise program. Following an evaluation, we begin aquatic exercises to promote flexibility, reduce pain and improve overall functional mobility. If a patient's incision isn't fully closed, we apply a thin, transparent wound dressing before he enters the water.

Beginning in the water has several advantages. The 92-degree water temperature improves muscle extensibility and prepares the tissue to stretch. In addition, a patient can practice active-assistive and ROM exercises by using flotation cuffs on the lower extremities. Performing closed chain exercises in multiple directions and at different speeds challenges patients in a way that's not always possible on land in the early rehab stages.

Working in a dynamic pool that generates a laminar flow current is beneficial. The laminar flow acts as a second pair of hands to improve patients' feedback, alignment and stabilization. And the controllable current can challenge any level of patient, from the deconditioned to professional athletes. Using an aquatic isokinetic machine gives you unlimited

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possibilities for therapeutic regimens. You can get as aggressive and creative as a patient's condition and abilities allow, provided you ensure proper alignment and stabilization.

Pools that use underwater treadmills allow therapists to incorporate multidirectional, multispeed gait training. You can closely monitor a patient's gait and cue for proper alignment. In addition, pools with viewing windows help monitor a client's alignment because they reduce the water's distortion.

During the land component, we start patients on a recumbent bike to work ROM. Next, we help them complete a series of open and closed kinetic chain exercises that emphasize strength, balance, proprioception and coordination. To finish the session, we perform manual therapy consisting of joint and incisional mobilizations and passive ROM.

After the first session, we schedule the client for 2 to 3 60-minute sessions per week. In my experience, patients report less discomfort with the integrated protocol versus a traditional land-based program.

• **Low-back pain.** Integrated protocols are also useful for patients with low back pain.

We use a land evaluation similar to the one described for knee replacement patients and immediately follow it with 20 to 30 minutes of aquatic treatment. This usually helps reduce symptoms while also determining the effectiveness of unloading.

A typical treatment session lasts an hour and consists of shallow- and deep-water exercises that promote cardiovascular endurance, alignment and stabilization, with an emphasis on transverse abdominus recruitment in various positions and directions.

After the water session, patients perform exercise on an upper body ergometer, followed by standing cable-column exercises that mimic water exercises.

The result is a greater carryover with motor learning on land. For example, a client can perform a kickboard straight-arm push-down while standing, which is similar to the movement on a cable column.

After patients maximize their potential in the water, they are transitioned to all land-based work. However, this usually doesn't occur until the later stages of rehab.

Reimbursement is something you may ques-

tion before incorporating an integrated protocol. Reimbursement usually varies by state and insurance provider. An integrated treatment is more cost effective for patients whose insurance companies limit the number of visits or for those with hefty co-pays.

Aquatic therapy can be more expensive than land therapy. Patients may have financial limits for treatment or a co-pay percentage. In these cases, be creative and use your best judgment. Our clinic offers a transitional swim program, which is similar to a health club membership. A patient can participate in the program for his aquatic component and then follow the session with land-based physical therapy.

We've had success incorporating integrated therapy into our programs. If you think outside the box and use aquatic therapy appropriately, you'll produce positive results and satisfied patients. ■

For a list of references, go to [www.advanceweb.com/rehab](http://www.advanceweb.com/rehab) and click on the references toolbar.

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