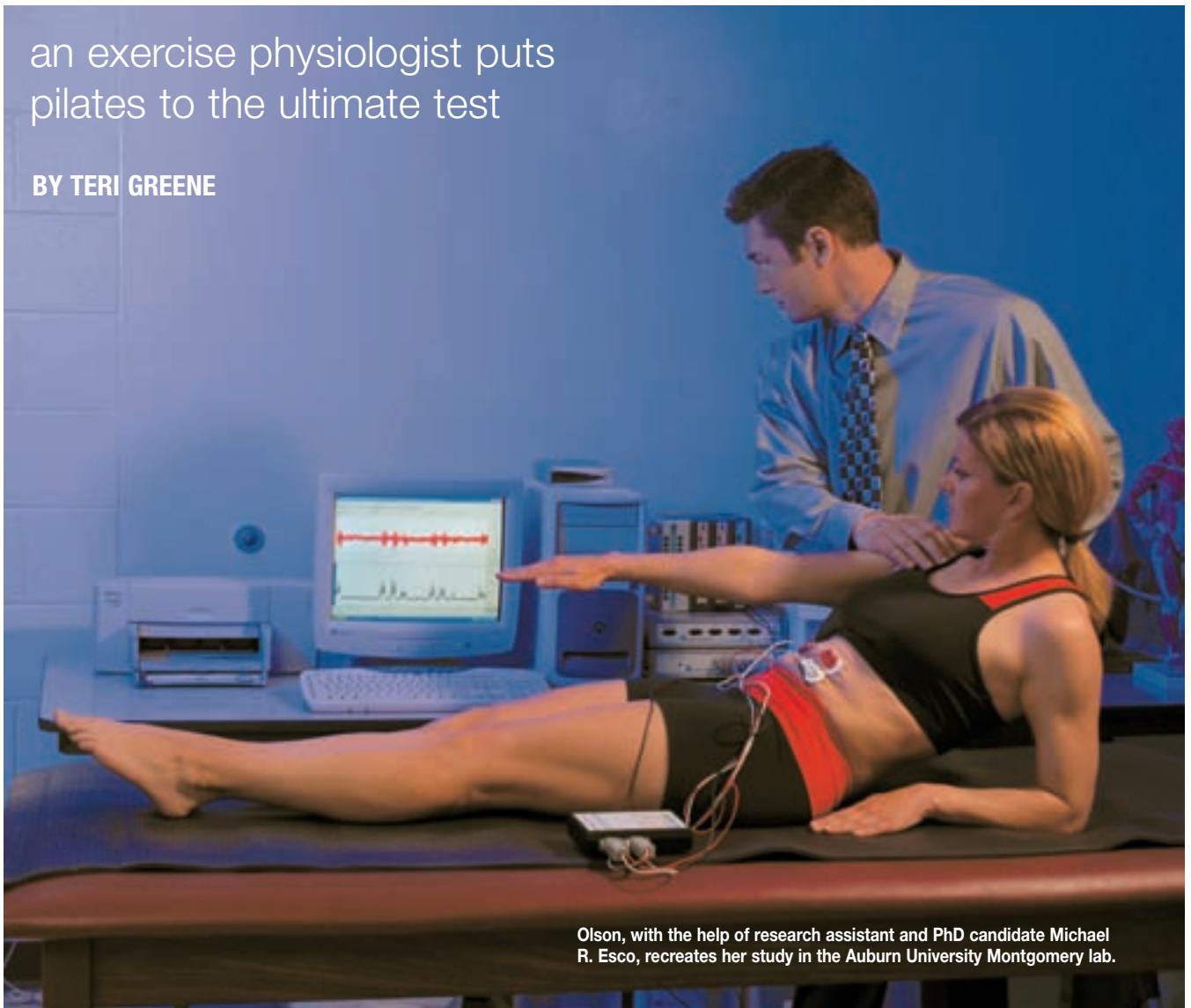


the doctor is in

an exercise physiologist puts
pilates to the ultimate test

BY TERI GREENE



Olson, with the help of research assistant and PhD candidate Michael R. Esco, recreates her study in the Auburn University Montgomery lab.

PHOTOS BY FRANK C. WILLIAMS; CLOTHES BY FIT COUTURE

Michele Olson, PhD, had always heard that Pilates was the most effective way to exercise those tough recruits, the transversus abdominis (TA) and internal obliques (IO). But Olson is no ordinary Pilates enthusiast—or instructor. She’s an exercise physiologist at Auburn University Montgomery in Alabama (and a regular contributor to *Pilates Style*). For this demanding scientist, anecdotal claims weren’t enough. She needed proof.

So Olson undertook the research herself. Her latest study set out to ask: To what degree do Pilates abdominal exercises challenge those deep abdominal muscles? And which are the best exercises to engage those muscles? To find out, she set out to test five Pilates abdominal exercises—the Ab Prep, the Hundred, the Roll-up, the Double-Leg Stretch and the Side Bend—measuring abdominal-muscle activity, both deep (involving the TA and IO) and superficial (using the rectus abdominis, or six-pack muscle). This was only the latest phase of ongoing Pilates research that Olson began in 2004. But the nature of this study would prove to be her greatest challenge.

The site of Olson’s investigation was her university’s Human Performance Lab. Though a Pilates devotee, Olson was determined to be unbiased when it came to the study’s results. Her aim was simply to see whether there was any truth to the claim. “If anything, I was skeptical,” she admits. “I said, ‘Let’s try to find out how it really might benefit somebody and focus on that—and not go off the deep end on things that we just don’t know about.’”

She recruited 12 participants, ages 26 to 60 and ranging from novice to Pilates instructor. The tests were randomized, meaning each participant performed only a brief session of exercises during each lab visit and always in a different order.

Since the internal abdominal muscles are covered by layers of outer muscles, their activity is usually measured via internal electromyography (EMG). This method, also called fine-wire EMG, is most often used in medical diagnostics. But it’s extremely labor-intensive and risky: Wires have to be inserted internally, opening up the possibility for nerve damage and infection. In short, it isn’t a viable option for an exercise study.

Olson’s research unearthed a noninvasive method that produced results nearly identical to fine-wire EMG—one that targets a small area, low in the pelvis, that is free of the outer layer muscles and is covered only by fascial tissue—the only spot that can be used to measure deep IO and TA activity. By

attaching external electrodes to that precise site on participants, she could accurately measure internal abdominal activity without going under the skin.

To help her find that elusive spot, she enlisted local physical therapists for each exercise session. Yet it was far from simple. Before beginning an exercise, study participants had to move around a bit to ensure that the electrodes were precisely in place before they could begin their Pilates ab exercises.

So how did the exercises rank? The Hundred and Double-Leg Stretch were the most “bullish” on TA/IO activity; along with the Side Bend, they also produced the lowest levels of rectus abdominis (RA) activity. The Ab Prep and Side Bend were also effective in working the internal muscles but at more moderate levels. The Roll-up produced a moderate level of internal abdominal activity but registered a high level of RA

activity. As Olson explains, that’s because exercises that require full flexion of the upper body away from the floor—such as the Roll-up—must, by definition, strongly activate the rectus abdominis. That doesn’t mean the exercises are less effective overall, however. “It’s a myth that any one abdominal muscle is superior to the others,” she says. (See Olson performing the exercises, next page.)

Knowing which Pilates abdominal exercises condition the deep muscles and which don’t can have powerful implications. For instance, instructors working with clients who have lower-back pain can emphasize deep muscle exercises, with an awareness that not

every Pilates exercise is “magic” for alleviating low-back pain. And, says Olson, “Pilates teachers can couple these results with my former research [on TA/IO response of the Criss-Cross and Teaser] to better ensure well-rounded work in the trunk and pelvic area.”

The bottom line is that those claims you hear about Pilates’ ability to engage internal abdominal muscles have been incontrovertibly backed up with scientific proof. Michele Olson presented this study’s results on May 30 at the International American College of Sports Medicine meeting in Indianapolis, and the results were published in the June 2008 supplemental issue of that organization’s official publication.

Teri Greene is a health and fitness writer based in Montgomery, Ala.



Ab Prep

Keep your pelvis and spine in neutral and your neck long. Use your sternum as your pivot/hinge point as you slightly curl up. Keep the bottom of your scapulae on the floor and focus on gently trying to flatten the area that is about an inch below your navel. Activate the pelvic floor. This prevents you from drawing your navel in too far, which can cause you to overrecruit your external obliques.

Hundred

After you are imprinted, your shoulders will be higher off the mat than in the Ab Prep. Keep your glutes relaxed, pelvic floor engaged, back lengthening on the mat and, instead of drawing the navel deeply inward, focus on flattening the abdominal area at a spot that is about an inch below your navel.



Double-Leg Stretch

Follow similar cues for the Hundred and do not round your back too heavily when the legs and arms come in to encircle one another. Instead, exhale vigorously and lightly cup your hands on your shins while keeping your sacrum on the mat.



Side Bend

Think of the side of your waistline growing long as you lift your hips off the mat. Be sure that the side of your body is facing the ceiling. If you exhale effectively when hitting the side-lifted position, you won't need to focus on heavily pulling in your navel. The transversus abdominis will naturally activate to stabilize the trunk and spine. Focus more on keeping the pelvic floor activated throughout the movement. 