

On “The American Physical Therapy Association’s top five Choosing Wisely recommendations.” White NT, Delitto A, Manal TJ, Miller S. *Phys Ther.* doi: 10.2522/ptj.20140287.

[Editor’s note: Both the letter to the editor by Bjordal and colleagues and the response by White and colleagues are commenting on the author manuscript version of the article that was published ahead of print September 15, 2014.]

We have read “The American Physical Therapy Association’s Top Five Choosing Wisely Recommendations”¹ (CWR) with interest. The article will probably have great impact as an official white paper originating from APTA, and it joins a national initiative aimed at reducing health care costs across professions. This is an important and timely initiative, and it is welcomed.

The first of the 5 specific recommendations is to limit the use of “passive” physical agents (PAs) because: “A carefully designed active treatment plan has a greater impact on pain, mobility, function, and quality of life.”

Within our profession, other interventions such as massage, manipulation, and mobilization also are “passive” modalities (cf, exercise), but they are very seldom labeled as such. Similarly, analgesic medications, injections, and surgery also are “passive” treatments. All of these non-physical therapy-related interventions come with higher risk than physical agents or even manual therapies. Physical agents can provide safe, low-cost management as an alternative to analgesic medications or more invasive procedures, such as injections or surgery. Some physical agents also can be provided to the patient for home use as part of a self-management plan.

Additionally, this recommendation is not based on the best available evidence. It is important to remember that the framework for CWR demands identification of certain tests or treatments commonly used “in the absence of evidence demonstrating benefit.” The ABIM Foundation even strengthens the evidence criterion to say that: “there is *strong evidence* that demonstrates that the service offers no benefit to most patients.”¹

The first CWR states, “Don’t use passive physical agents except when necessary to facilitate participation in an active treatment program”; this statement is backed by the following description and 5 references: “There is limited evidence for use of passive physical agents to obtain clinically important outcomes for musculoskeletal conditions. A carefully designed active treatment plan has a greater impact on pain, mobility, function, and quality of life. Although there is some evidence of short-term pain relief for certain physical agents, the addition of passive physical agents should be supported by evidence and used to facilitate an active treatment program.” This requires careful consideration from 2 perspectives to assess the scientific evidence behind the CWR statement.

Do the Cited References Contain “Strong Evidence of No Benefit” From Electrophysical Agents (EPAs)?

The only reference provided in the article containing any evidence of no benefit or benefit is a small (n=20), low-quality, unblinded chronic low back pain trial² with high risk of bias (4/10 quality criteria in the PEDro database of trials). Such a poor-quality score makes it impossible for this study to generate strong evidence of no benefit. Notwithstanding the low internal validity of the study, we might add that the PA

interventions in this trial are largely administered with insufficient treatment times (5 minutes) for electrical stimulation³ and shortwave therapy (10 minutes)⁴ and inappropriate laser wavelength ($\lambda=632$ nm).⁵

The second reference is a systematic review on patellofemoral pain syndrome (PFPS),⁶ which concluded: "None of the therapeutic modalities reviewed has sound scientific justification for the treatment of PFPS when used alone." However, this statement is largely due to the fact that only one⁷ of the 12 included studies was actually designed to investigate the effect of electrophysical agents (EPAs) alone over placebo. Consequently, this systematic review does not provide strong evidence for no benefit of PA; indeed, some of the included studies failed to show effects when PAs were added to an exercise program.

The third reference is a nonrandomized retrospective analysis of physical therapist treatment of acute low back pain, which has a high risk of bias and may be a classical case of confounding by indication.⁸ Consequently, this study does not have the scientific quality needed to provide "strong evidence of no benefit" of PA.

The last 2 references do not add any evidence, as they refer to an overview of existing guidelines in primary care and a multidisciplinary guideline for chronic pain management, respectively. In other words, the evidence cited in support of this recommendation is not strong for "no benefit," but rather the evidence is at best weak and conflicting.

Is There Evidence That Outcomes Are Improved When Passive Modalities Are Used Selectively and in Conjunction With an Active Treatment Program?

This means that active treatments are always best, and, if considering PAs,

then this should only be done as an adjunct to the active program: it is assumed that the effectiveness of active treatments are self-evident and that any effectiveness of PAs is when used as adjuncts (although "adding" treatments would seem at odds with central tenets of the CWR initiative).

Let us consider low back pain as an example again, but this time for patients with acute conditions. Exercise therapy is the most common component in an active treatment program; however, a Cochrane review on exercise therapy concluded that in acute low back pain, exercise was "as effective as no treatment."⁹

The next question we should ask is if there is any (strong or other) evidence *for* effects of EPAs in acute low back pain. There are, in fact, several high-quality PA trials (method scores: 7/10 to 10/10) in the PEDro database that have found significant pain-relieving effects from heat therapy,^{10,11} transcutaneous electrical nerve stimulation (TENS),¹² and low-level laser therapy.¹³ Evidence for, or against, improved outcomes in acute low back pain when adding exercises to EPA treatment is, in contrast, weak. None of the trials investigated the added benefit of exercise therapy except one study that showed that adding exercises did not improve short-term outcome for heat therapy.¹¹ In a broader perspective, there are studies of acceptable quality that have shown better short-term pain relief when adding low-level laser therapy to an active exercise regimen in knee osteoarthritis,¹⁴ Achilles tendinopathy,¹⁵ tennis elbow,¹⁶ and shoulder tendinopathy.¹⁷ Also, there are meta-analyses showing that TENS alone reduces postoperative pain intensity and analgesic consumption by 35%.^{18,19} Consequently, strong evidence of no effect from PAs has not been pro-

vided, and thus the evidence underpinning the first CWR lacks scientific credibility.

The CWR states, "Don't use passive physical agents except when necessary to facilitate participation in an active treatment program." The justification for this recommendation states, "There is emerging evidence that passive physical agents can harm patients by communicating to them that passive, instead of active, management strategies are advisable, thus exacerbating fears and anxiety that many patients have about being physically active when in pain, which can prolong recovery, increase costs, and increase the risk of exposure to invasive and costly interventions such as injections or surgery."

This statement has not been substantiated by scientific evidence from a sufficient number of randomized controlled trials (RCTs). None of the cited references directly addressed harm for the use of physical agents, addressed that use of physical agents increased fear and anxiety, or addressed that there was an increased cost or increased risk for use of invasive interventions. Only 2 of references 9–15 are RCTs or systematic reviews of RCTs, and none of them addresses the issues in the statement. Two retrospective observational studies are cited, but they have no causal power and may be confounded by indication and a number of other factors. We also question the lack of differentiation in the statement, which implies that the recommendation applies for any condition, acute or chronic, regardless of general or specific and localized pathology. And shall patients where immobilization is required be denied EPA treatment? The dozens of Cochrane reviews completed on EPA RCTs do not provide any such evidence, except one Cochrane review that explicitly states there is

moderate evidence that TENS did not change use of medical services or work status.²⁰ Scattered evidence from Cochrane suggests that EPAs are virtually harmless and can give short-term,²¹ intermediate-term,²² or long-term effects and fewer relapses.²³

What Should We Learn?

Two points emerge from detailed consideration of this CWR recommendation.

The Delphi process used here apparently did not apply a robust systematic approach to assessing evidence; therefore, there is no guarantee that statements are founded on best available evidence. The literature references apparently indicate a biased, superficial, and selective search, aimed only at supporting the statement, and disregarding opposing references. Systematic literature searches could have been performed, and the prevalent methodological shortcomings in selected references should have been addressed. In addition, balancing the working panel to include experts on the literature on “passive” physical agents would have helped, particularly as 2 of the initial 9 statements included EPA use.

In the PEDro database, there are currently 3,207 randomized controlled EPA trials, and 57% of these trials were published after 2004. Even we in the World Confederation of Physical Therapy (WCPT) specialist subgroup International Society of Electrophysical Agents in Physical Therapy have a hard time keeping track of all the new EPA studies being published. Our main research goal at the moment is to develop EPAs further to become evidence-based, harmless substitutes for expensive and potentially harmful analgesic medication, and not substitutes for active treatments, as the panel seems to imply.

As physical therapists, our professional practice and ethos are cen-

tered on the active and movement-centered approach; and as PA researchers, we frequently recommend the combination with active treatments, but not because PAs cannot be used alone or because the scientific support for active treatments is always superior. On the contrary, the scientific literature on PAs gives evidence of dose-specific, short-term effects, which, in early parts of the rehabilitation process, may be even better than active treatments. Should we then refrain from treatment with PAs? If physical inactivity, fear-avoidance behavior, or kinesiophobia is a problem, our evidence-based approach would be to address that with cognitive or movement therapies, and not by denying the patient potentially effective pain relief from PAs. There has been a long, and probably justified, decline in use and popularity for PAs among physical therapists in Western societies. However, we are now at a point where we should let scientific evidence—and not biased preconceptions—guide the way. There remains a moral imperative for us all to apply evidence-based practice: “conscientious, judicious use of the best available evidence.”

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The American Physical Therapy Association's Top Five Choosing Wisely Recommendations

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ProfessionWatch: APTA's Top Five Choosing Wisely Recommendations

Table 5.
Five Things Physical Therapists and Patients Should Question

Recommendation	Justification Statement	Key Citations
<p>Don't use passive physical agents except when necessary to facilitate participation in an active treatment program.</p>	<p>There is limited evidence for use of passive physical agents to obtain clinically important outcomes for musculoskeletal conditions. A carefully designed active treatment plan has a greater impact on pain, mobility, function, and quality of life. Although there is some evidence of short-term pain relief for certain modalities, outcomes are improved when passive physical agents are used selectively and in conjunction with an active treatment program. There is emerging evidence that passive physical agents can harm patients by communicating that passive, instead of active, management strategies are advisable, thus exacerbating fears and anxiety that many patients have about being physically active when in pain, which can prolong recovery, increase costs, and increase the risk of exposure to invasive and costly interventions such as injections or surgery.</p>	<p>Chatzitheodorou D, Kabitsis C, Malliou P, Mougios V. A pilot study of the effects of high-intensity aerobic exercise versus passive interventions on pain, disability, psychological strain, and serum cortisol concentrations in people with chronic low back pain. <i>Phys Ther.</i> 2007;87:304–312.</p> <p>Fritz JM, Cleland JA, Brennan GP. Does adherence to the guidelines recommendation for active treatments improve the quality of care for patients with acute low back pain delivered by physical therapists? <i>Med Care.</i> 2007;45:973–980.</p> <p>Hooten WM, Timming R, Belgrade M, et al; for the Institute for Clinical Systems Improvement. Assessment and management of chronic pain guidelines. Institute for Clinical Systems Improvement website. Updated November 2013. Available at: https://www.icsi.org/_asset/bw798b/chronicpain.pdf.</p> <p>Hurkmans EJ, Jones A, Li LC, Vliet Vlieland TP. Quality appraisal of clinical practice guidelines on the use of physiotherapy in rheumatoid arthritis: a systematic review. <i>Rheumatology (Oxford).</i> 2011;50:1879–1888.</p> <p>Hurwitz EL, Carragee EJ, van der Velde G. Treatment of neck pain: noninvasive interventions. <i>Eur Spine J.</i> 2008;17:123–152.</p> <p>Jewell DV, Riddle DL, Thacker LR. Interventions associated with an increased or decreased likelihood of pain reduction and improved function in patients with adhesive capsulitis: a retrospective cohort study. <i>Phys Ther.</i> 2009;89:419–429.</p> <p>Koes BW, van Tulder M, Lin CW, et al. An updated overview of clinical guidelines for the management of non-specific low back pain in primary care. <i>Eur Spine J.</i> 2010;19:2075–2094.</p> <p>Lake DA, Wofford NH. Effect of therapeutic modalities on patients with patellofemoral pain syndrome: a systematic review. <i>Sports Health.</i> 2001;3:182–189.</p> <p>Philadelphia Panel evidence-based clinical practice guidelines on selected rehabilitation interventions: overview and methodology. <i>Phys Ther.</i> 2001;81:1629–1640.</p> <p>Pillastrini P, Gardenghi I, Bonetti F, et al. An updated overview of clinical guidelines for chronic low back pain management in primary care. <i>Joint Bone Spine.</i> 2012;79:176–185.</p> <p>Ulus Y, Tander B, Akyol Y. Therapeutic ultrasound versus sham ultrasound for the management of patients with knee osteoarthritis: a randomized double-blind controlled clinical study. <i>Int J Rheum Dis.</i> 2012;15:197–206.</p>