

FEATURE

Spotlight shifts to active treatment for concussions**Publish date:** February 23, 2017**By:** [Christine Kilgore](#), Pediatric News

The prevailing notion that concussions should be managed solely or primarily with prescribed cognitive and physical rest is shifting.

Experts in concussion management are increasingly in agreement that concussion is a much more heterogeneous injury than previously believed, and that “active” approaches targeting specific symptoms and impairments can be initiated early and may improve recovery for patients who have concussions from sports as well as from falls, motor vehicle accidents, or other accidents.

Evidence for such active approaches to rehabilitation – including vestibular, vision, and behavioral therapies, and submaximal aerobic training – is deemed “preliminary” by experts and comes from small, mostly single-center studies.

But “the literature is way, way behind what people are understanding clinically,” said [Brian Hainline, MD](#) <<http://www.med.nyu.edu/biosketch/hainlb01>> , clinical professor of neurology at New York University, and Indiana University, Indianapolis, and chief medical officer of the National Collegiate Athletic Association, Indianapolis.

“There’s emerging evidence that strict or prolonged rest is not good, and there’s emerging consensus that we need to start looking at concussion subtypes” and then target treatments to those clinical profiles, he said. “We’re at the cusp of dramatic changes [in management].”



Dr. Brian Hainline

An article published recently in *Neurosurgery* and coauthored by several dozen concussion experts details 16 “statements of agreement” on targeted evaluation and active management. The experts – from neuropsychology, sports medicine, neurology and neurosurgery, athletic training, and other fields – convened in Pittsburgh in late 2015 at the invitation of Michael W. Collins, PhD, and his colleagues at the University of Pittsburgh Medical Center (UPMC), where the Sports Medicine Concussion Program was established in 2000 ([Neurosurgery. 2016 Dec;79\[6\]:912-29](#) <<https://academic.oup.com/neurosurgery/article-lookup/doi/10.1227/NEU.000000000001447>>).

The NCAA Sport Science Institute also just published a “best practices” document <<http://www.ncaa.org/sport-science-institute/concussion-diagnosis-and-management-best-practices>> that similarly encourages consideration of active treatment approaches for some patients. And a consensus statement to be published soon from the 5th International Conference on Concussion in Sport, held in October 2016, is expected to more substantively address active management than did the 4th statement issued in 2013.

Thus far, guidelines and statements on concussion in sport have advised a rest-based approach to management that’s dependent on the spontaneous resolution of symptoms. In some documents, rest is recommended until patients are asymptomatic. Other statements mention the possibility of symptom-based approaches after initial rest, but offer little if any guidance.



Dr. Michael W. Collins

The theory of prescribed rest has been twofold, driven both by concern about re-injury in sport and by the belief that cognitive and physical activity can exacerbate symptoms and concussion-associated impairments, thus prolonging recovery, the Pittsburgh paper says.

However, “avoiding contact during the vulnerable period after concussion and prescribed rest represent two separate strategies,” the experts wrote. Avoiding contact “is always recommended to avoid further head impacts,” they say, but monitored activity does not appear to worsen injury.

Recent research suggests, moreover, that prolonged physical and cognitive rest – not activity – is associated with increased symptoms and delayed recovery. And strict rest – avoidance of nearly all brain stimulation – is “not empirically supported ... and may have unintended adverse effects,” the experts wrote.

Mark Halstead, MD <<http://www.ortho.wustl.edu/content/Patient-Care/2797/Find-a-Physician/Physician-Directory/Mark-Halstead-MD/Bio.aspx>> , a member of the American Academy of Pediatrics’ Council on Sports Medicine and Fitness, said a revision of the AAP’s 2010 clinical report on sport-related concussion in children and adolescents is expected out later this year and will advocate against “the extremes of rest for kids.”

Physicians and others “have to avoid treating concussion as a punishment,” said Dr. Halstead of St. Louis Children’s Hospital in Chesterfield, Mo., who coauthored a recent editorial entitled “Rethinking Cognitive Rest” (*Br J Sports Med.* 2017;51:147 <<http://bjsm.bmj.com/content/51/3/147.short>>).



Courtesy Washington University

Dr. Mark Halstead

“It’s been taken to the extreme. When we talk about not texting or not going out or not doing anything physically active until you’re without symptoms ... students can develop symptoms of depression and anxiety that then just complicate the injury altogether,” he said.

Physicians also need to dig beneath symptom checklists and perform multidomain assessments to better understand root contributors of symptoms that, without active treatment, can persist for weeks upon weeks in some patients. “There could be neck injuries, sleep issues, vestibular issues, oculomotor issues” and different types of headache, Dr. Halstead said. “If we can identify these things, we can actually be doing rehabilitation to fix these injuries.”

At UPMC’s Sports Medicine Concussion Program, concussions are generally categorized into six clinical profiles – vestibular, ocular-motor, cognitive/fatigue, posttraumatic migraine, cervical, and anxiety/mood. The profiles are not mutually exclusive, but each drives particular rehabilitation recommendations. Clinicians at other concussion programs and centers are similarly attempting to classify concussions.

“We still need to come to agreement as to what exactly the clinical profiles are,” said UPMC’s Dr. Collins, who directs the concussion program and is the lead author of the Neurosurgery paper. “But I think the big concept to come out of our meeting is that we now agree there are different profiles and that we have to match treatment.”

Additional research is needed to determine and validate concussion clinical profiles, to identify biomarkers to assess recovery and determine the effectiveness of treatments, and to determine the best timing of specific active treatments, he and his coauthors said.

Applying individualized and active treatments after concussion is consistent with approaches taken for other injuries and conditions, noted Dr. Hainline, who attended both the UPMC conference and the 5th International Conference on Concussion in Sport.

“It’s rare that prolonged rest is the answer. Look at stroke – you don’t have patients resting indefinitely. You have to get their nervous systems re-engaged,” he said.

“If you keep [concussion] patients with predominantly vestibular symptoms at rest [for example], the vestibular symptoms can become more centralized, and that then becomes the behavior of the nervous system,” he said. “Another example is convergence insufficiencies – if you keep resting [the vision system] and don’t rehabilitate it,” symptoms perpetuate.

Prolonged rest also may lead to deconditioning that lowers tolerance for physical activity. Randomized clinical trials are needed to compare the benefits of physical rest with those of more physically active treatments, but “emerging clinical research” suggests that exposing patients to supervised low-level physical activity (for example, submaximal aerobic training) after an initial period of rest is “not only safe but effective,” the Pittsburgh conference paper says.



Dr. Robert L. Wergin

[Robert L. Wergin, MD <http://www.mhcs.us/physicians/robert-l-wergin-md>](http://www.mhcs.us/physicians/robert-l-wergin-md), a family physician in Milford, Neb., and former president of the American Academy of Family Physicians, said he has been individualizing his approach in recent years, bringing most adolescents back to school part-time on the third day after injury and monitoring symptoms with help of parents, coaches, and teachers. For younger children, the “return to learn” process may start a bit later, he said.

The Pittsburgh conference paper “rang a bell with me,” Dr. Wergin said. “Rest is still important, but prolonged rest may not be best for all patients, and maybe it’s possible to do some interventions. We need to stay tuned as we get more of an evidence base.”

The conference – coined the TEAM (for targeted evaluation and active management) Approaches to Treating Concussion Meeting – was attended by staff from the National Institutes of Health, the Centers for Disease Control and Prevention, the Department of Defense, and the National Football League (NFL) and other sporting organizations, Dr. Collins said. It was sponsored by UPMC and the NFL. Coauthors reported numerous disclosures, including various advising and consulting roles with the NFL.

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Christine Kilgore, Pediatric News

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