

# Combined rehab programs help adolescents with concussions, study finds

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Adolescents who undergo early vestibular rehabilitation in conjunction with behavioral management treatment experience a more pronounced improvement in concussion symptoms than those treated only with a behavioral management program, according to new research led by the University of Pittsburgh and UPMC Sports Medicine Concussion

Program.

The results, published online in *Journal of Pediatrics* showed significant improvements when vestibular rehabilitation was added to the treatment.

"Precision interventions targeting vestibular symptoms and impairment in adolescents following a concussion are effective in reducing those symptoms and impairments, above and beyond the positive effects of across-the-board behavioral management interventions," said lead author Anthony Kontos, Ph.D., research director at UPMC's Sports Medicine Concussion Program.

Vestibular symptoms and impairments include dizziness, imbalance and vertigo. These symptoms have been associated with worse clinical outcomes and a longer recovery time in adolescents.

The researchers analyzed 55 participants between the ages of 12-18 years—all with a diagnosed sport-/recreation-related concussion with [vestibular symptoms](#)/impairment. The patients were randomized into a four-week behavioral management control group with prescribed management strategies focused on physical activity, sleep, hydration, nutrition and stress management or a vestibular [intervention](#) group that included the behavioral management program and additional prescribed precision rehabilitation exercises. Both groups experienced improvement; the most pronounced effect was found in stabilization of vertical eye movements, with the vestibular treatment group experiencing nearly double the improvement of the control group.

"These findings provide a strong foundation for new research to determine the most effective frequency, intensity and timing for vestibular rehabilitation to better inform clinical practice guidelines," said senior author Michael "Micky" Collins, Ph.D., executive and

clinical director of UPMC's Sports Medicine Concussion Program.

Co-authors include Michael Collins, Ph.D., Shawn R. Eagle, Ph.D., Anne Mucha, D.P.T., Victoria Kochick, D.P.T., Jessica Doman, D.P.T., Claire Moldovan, D.P.T., Cyndi Holland, M.P.H., and Nicholas Blaney, B.S., all of University of Pittsburgh.

**More information:** Anthony P. Kontos et al, A Randomized Controlled Trial of Precision Vestibular Rehabilitation in Adolescents following Concussion: Preliminary Findings, *The Journal of Pediatrics* (2021). [DOI: 10.1016/j.jpeds.2021.08.032](https://doi.org/10.1016/j.jpeds.2021.08.032)

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