



Topic Exploration Report

Topic explorations are designed to provide a high-level briefing on new topics submitted for consideration by Health Technology Wales. The main objectives of this report are to:

1. Inform discussions on new topics received by HTW.
2. Determine the quantity and type of evidence available on a topic.
3. Assess the topic against HTW selection criteria.

Topic:	Squeeze balls for people with attention deficit hyperactivity disorder (ADHD)
Topic exploration report number:	TER012
Referrer:	Dr Thomas Martin
Topic exploration undertaken by:	Health Technology Wales

Aim of Search

Health Technology Wales researchers searched for evidence on the use of squeeze balls or other fidget devices in adults with ADHD and whether their use is efficacious in the management of psychomotor agitation.

Summary of Findings

A broad search was conducted with the aim of identifying evidence on the use of non-medicine technologies in the treatment/day to day management of patients with ADHD. No age specificity was used as it is felt that relevant findings in children could be extrapolated to adults.

There are numerous papers on the subject of management of ADHD using non-medicine technologies, but very few were identified that dealt with fidget devices.

The initial search was restricted to secondary research, namely systematic reviews, technology assessments, guidelines and economic evaluations. There are both NICE and SIGN guidelines on ADHD, but these do not make any specific recommendations on fidget devices. There are numerous systematic reviews dealing with management of ADHD, but very few consider fidget devices as an intervention.

An additional search was run to identify RCTs and observational studies specific to the concept of fidget devices and ADHD. Only one relevant (review) paper was identified. Therefore the evidence base appears to be insufficient to make any detailed assessment of fidget devices for ADHD.

Conclusions

There is limited secondary research that considers the use of stress balls or other fidget devices. Some of the evidence identified considered non-pharmacological interventions, such as exercise or cognitive behavioural therapy, but very few mention use of fidget devices.

No cost information was identified.

Areas of Uncertainty

It is unclear whether the evidence on other mental health disorders for which psychomotor agitation is also present would be relevant.

Feasibility of Technology Assessment

Stress balls or other fidget devices could provide a cheap, practical additional method of symptom management in ADHD. However, insufficient specific evidence was identified to assess the health benefits to patients from their use in the management of psychomotor agitation.

Due to the lack of available evidence, HTW's Assessment Group concluded not to progress this topic further.

Brief literature search results

Resource	Results
UK guidelines and guidance	
SIGN	SIGN guideline 112 'Management of attention deficit and hyperkinetic disorders in children and young people' does not consider stress balls, or other fidget devices. See Section 6 Psychological Interventions.
NICE	<p>NICE guideline 87 'Attention deficit hyperactivity disorder: diagnosis and management' states the following:</p> <p>1.5.16 Consider non-pharmacological treatment for adults with ADHD who have:</p> <ul style="list-style-type: none"> made an informed choice not to have medication difficulty adhering to medication found medication to be ineffective or cannot tolerate it. [2018] <p>1.5.17 Consider non-pharmacological treatment in combination with medication for adults with ADHD who have benefited from medication but whose symptoms are still causing a significant impairment in at least one domain. [2018]</p> <p>For the NICE evidence see https://www.nice.org.uk/guidance/ng87/evidence/e-nonpharmacological-efficacy-and-adverse-events-pdf-4783686305</p>
Secondary literature and economic evaluations	
Cochrane library	<ul style="list-style-type: none"> • Storebø, O. J., M. Skoog, D. Damm, P. H. Thomsen, E. Simonsen and C. Gluud (2011) "Social skills training for Attention Deficit Hyperactivity Disorder (ADHD) in children aged 5 to 18 years." Cochrane Database of Systematic Reviews DOI: 10.1002/14651858.CD008223.pub2.
Medline	<ul style="list-style-type: none"> • De Crescenzo, F., et al. (2014). "The use of actigraphy in the monitoring of methylphenidate versus placebo in ADHD: a meta-analysis." <i>Attention Deficit and Hyperactivity Disorders</i> 6(1): 49-58. • De Crescenzo, F., et al. (2016). "The use of actigraphy in the monitoring of sleep and activity in ADHD: A meta-analysis." <i>Sleep Medicine Reviews</i> 26: 9-20. • Gaastra, G. F., et al. (2016). "The Effects of Classroom Interventions on Off-Task and Disruptive Classroom Behavior in Children with Symptoms of Attention-Deficit/Hyperactivity Disorder: A Meta-Analytic Review." <i>PLoS ONE [Electronic Resource]</i> 11(2): e0148841. • Garcia Murillo, L., et al. (2015). "Locomotor activity measures in the diagnosis of attention deficit hyperactivity disorder: Meta-analyses and new findings." <i>Journal of Neuroscience Methods</i> 252: 14-26. • Hart, H., et al. (2013). "Meta-analysis of functional magnetic resonance imaging studies of inhibition and attention in attention-deficit/hyperactivity disorder: exploring task-specific, stimulant medication, and age effects." <i>JAMA Psychiatry</i> 70(2): 185-198. • Huizenga, H. M., et al. (2009). "Task complexity enhances response inhibition deficits in childhood and adolescent attention-deficit/hyperactivity disorder: a meta-regression analysis." <i>Biological Psychiatry</i> 65(1): 39-45. • Lijffijt, M., et al. (2005). "A meta-analytic review of stopping performance in attention-deficit/hyperactivity disorder: deficient inhibitory motor control?" <i>Journal of Abnormal Psychology</i> 114(2): 216-222. • Teicher, M. H. (1995). "Actigraphy and motion analysis: new tools for psychiatry." <i>Harvard Review of Psychiatry</i> 3(1): 18-35.

epistemonikos.org	<ul style="list-style-type: none"> Barry, Leasha M. , Haraway, Dana L. (2005) Self-management and ADHD: A literature review. The Behavior Analyst Today 6(1) 48-64 Schoenfelder EN, Faraone SV & Kolins SH (2014) Stimulant Treatment of ADHD and Cigarette Smoking: A Meta-Analysis. Pediatrics 133(6) 1070-1080 Torgersen T , Gjervan B , Lensing MB , Rasmussen K (2016) Optimal management of ADHD in older adults. Neuropsychiatric disease and treatment 12 79-87
evidence.nhs.uk/	<p>Guidance:</p> <ul style="list-style-type: none"> Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management ADHD: (2011) Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. Pediatrics 128(5) 1007-22 David McLoughlin, Nancy Doyle, (2017) Psychological assessment of adults with specific performance difficulties at work. The British Psychological Society - guidelines were developed in order to promote good practice in the psychological assessment in the workplace <p>Systematic Reviews:</p> <ul style="list-style-type: none"> Vysniauske R, Verburgh L, Oosterlaan J, Molendijk ML (2016). The Effects of Physical Exercise on Functional Outcomes in the Treatment of ADHD: A Meta-Analysis. Journal of Attention Disorders DOI: 10.1177/1087054715627489 Hodgson K, Hutchinson AD, Denson L. (2014) Nonpharmacological treatments for ADHD: a meta-analytic review. Journal of Attention Disorders 18(4): 275-282 - DOI 10.1177/1087054712444732 Torgersen T, Gjervan B, Rasmussen K. (2008) Treatment of adult ADHD: Is current knowledge useful to clinicians? Neuropsychiatric Disease and Treatment 4(1): 177-186 De Crescenzo F, Cortese S, Adamo N, Janiri L. (2017) Pharmacological and non-pharmacological treatment of adults with ADHD: a meta-review. Evid Based Ment Health 20(1):4-11-
CRD database	<ul style="list-style-type: none"> Michelle Richardson, Darren A Moore, Ruth Gwernan-Jones, Jo Thompson-Coon, ... and Tamsin J Ford (2015) Non-pharmacological interventions for attention-deficit/hyperactivity disorder (ADHD) delivered in school settings: systematic reviews of quantitative and qualitative research. Health Technology Assessment, 19(45) Daley D, van der Oord S, Ferrin M, Danckaerts M, Doepfner M, Cortese S, Sonuga-Barke EJ, European ADHD Guidelines Group (2014) Behavioral Interventions in Attention-Deficit/Hyperactivity Disorder: A Meta-Analysis of Randomized Controlled Trials Across Multiple Outcome Domains. Journal of the American Academy of Child & Adolescent Psychiatry 53(8) 835-847
Primary studies	
Medline	<ul style="list-style-type: none"> Schechter, R. A., et al. (2017). "Fidget spinners: Purported benefits, adverse effects and accepted alternatives." Current Opinion in Pediatrics 29(5): 616-618.
Cochrane library	We did not find any relevant primary studies on fidget devices and ADHD.
Ongoing studies	
	<ul style="list-style-type: none"> Treatment of adult attention deficit hyperactivity disorder. NIHR Health Technology Assessment programme. - This is a bibliographic record of an ongoing health technology assessment being undertaken by a member of INAHTA. http://www.hta.ac.uk/2641

Other	
Evidence identified by topic proposer	<ul style="list-style-type: none"> Hartanto, T. A., C. E. Krafft, A. M. Iosif and J. B. Schweitzer (2016). "A trial-by-trial analysis reveals more intense physical activity is associated with better cognitive control performance in attention-deficit/hyperactivity disorder." <i>Child Neuropsychology</i> 22(5): 618-626. Huntley, Z. and S. Young (2014). "Alcohol and substance use history among ADHD adults: the relationship with persistent and remitting symptoms, personality, employment, and history of service use." <i>Journal of Attention Disorders</i> 18(1): 82-90.

Date of search:	9 th -12 th & 30 th July 2018
Concepts used:	ADHD, attention deficit and hyperactivity disorder, stress ball, fidgeting, motor activity, actigraphy
Strategy for additional search	((stress\$ or squeez\$ or fidget\$ or twitch\$ or jitter\$ or fiddl\$ or worr\$3 or study or executive\$) adj2 (ball\$ or device\$ or gadget\$ or tool\$ or apparatus or widget\$ or aid\$3 or gizmo\$ or implement\$1 or utensil\$ or applian\$ or spin\$ or toy\$)).tw.