



Occupational Therapy Interventions for Adolescents: A Scoping Review

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Abstract

Aim and Background: Occupations are everyday activities that help occupy our time and provide us with a sense of purpose in life. Adolescence is a unique stage of life when individuals experience occupational change that assists with preparation for adulthood. Participation in occupations is linked to health and wellbeing. Existing literature on occupational participation appears to combine adolescents' and children's experiences. Due to the unique nature of adolescence and an increased focus on service development and re-design for all age groups in Australia since the implementation of the National Disability Insurance Scheme, this scoping review sought to explore Occupational Therapy interventions that promote adolescents' participation in everyday occupations. **Design and Methods:** A systematic search of eight databases for peer reviewed papers published between 2008 and 2018 was conducted. The PRISMA guidelines were used to guide the review processes. Study selection criteria focussed

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on Occupational Therapy interventions promoting participation in everyday occupations for adolescents (between 10 to 19 years of age). The data was charted and synthesised to identify key features of the interventions. **Results:** The 26 included studies revealed various intervention types and adolescent groups. The majority of the interventions targeted adolescents with physical disabilities and autism spectrum disorder. Many studies focussed on promoting functional independence in work, personal care, social participation and health management. Features of interventions include collaborative (with the adolescent and family) intervention goal setting and evaluation processes, as well as the use of technology. The majority of the papers reported positive outcomes, however mixed results were also identified. The findings provide guidance for adolescent service development and re-design by identifying the areas of occupation and features of programs, documented in Occupational Therapy-specific literature. Future reviews can extend our understanding further by incorporating by including publications that focus on assessment and other roles of Occupational Therapists.

Keywords: participation, occupation, Occupational Therapy, adolescents

Introduction

Occupational Therapists work with individuals to promote health and wellbeing through enabling participation in daily occupations including leisure, self-care, work and education (Occupational Therapy Australia, 2019). Engagement in meaningful occupations is linked to health and wellbeing (Christiansen & Townsend, 2014). This is highlighted in The World Health Organization's (WHO, 2001) International Classification of Functioning, Disability and Health Model (ICF) which recognises participation and activity as essential components of health and

function. The WHO (2001) defines participation as involvement in life situations, which can affect various domains of function including: communication, self-care and community involvement.

The WHO (2015) identifies that adolescence occurs between the ages of 10 – 19 years, but also acknowledge that age is only one factor that delineates this developmental stage, with social transition also having an important role (this can vary depending on a persons' social-cultural background). Adolescence is regarded as a unique stage of human development, when individuals experience physical, social and emotional changes that aide the transition from childhood to adulthood (Mui Lim & Jones, 2017). It is also a time when individuals undergo significant occupation-related development contributing to their changing identity (Mui Lim & Jones, 2017; Maxey & Bekert, 2017). These occupational changes assist adolescents to develop the skills to support successful transition into adulthood, including the skills to maintain positive relationships, gain employment and live independently (Mui Lim & Jones, 2017). Adjustment to such changes can be challenging for all adolescents, particularly for those with disabilities (Maxey & Bekert, 2017). Hence it is important that support is provided to facilitate adolescents' participation in meaningful and developmentally appropriate tasks, where required (e.g. sexual and reproductive health promotion, pre-vocational training and learning to cook and clean).

When reviewing the Occupational Therapy literature, there appears to be a plethora of publications that group adolescents with children (e.g. Arbesman et al., 2013; Cahill et al., 2016; Kreider et al., 2014). To the best of our knowledge, there have been no reviews that address Occupational Therapy interventions that promote participation specifically for adolescents. In Australia, funding such as the National Disability Insurance Scheme (NDIS) has led to the stimulation of service development and re-design for all ages, including those for adolescents.

Due to renewed focus, as well as the unique, complex nature of adolescence and the importance of participation in occupations, this scoping review sought to fill this gap by exploring Occupational Therapy interventions that promote adolescents' participation in everyday occupations. By gaining an overview of interventions for adolescents, considerations may be gained for service development and design. This research was undertaken as part of an Honours degree.

Methods

A scoping review was used to facilitate the aim of this study: to provide an overview of the literature, through systematic summarising and mapping, in accordance with Peters et al. (2015). This review adhered to the following steps (1) defining the review aim and question, (2) developing suitable inclusion criteria, (3) describing the planned approach (study search, selection, extraction and charting), (4) searching the literature, (5) selecting the evidence, (6) extracting the evidence, (7) charting the evidence, (8) summarising the evidence, (9) consulting experts throughout the process i.e. librarians (Peters et al., 2015). The review was conducted and reported according to the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) extension for Scoping Reviews (Tricco et al., 2018). The design was chosen to answer the following broad research question: *What Occupational Therapy interventions have been reported to promote participation in everyday occupations for adolescents?*

Due to the broad nature of scoping reviews, it is important to define the scope of the inquiry (Peters et al., 2015). This review's scope included defining the study population (adolescents), the concept (interventions to promote participation in everyday occupations) and the context (not specified). The population (P) was specified by age (between 10 to 19 years of age), as defined by the WHO (2015), to assist with setting some clear operational parameters for study inclusion

and with replication. This review was also inclusive of adolescents with and/or without any kind of condition or disability to help broadly map the areas of therapy evident in literature. The concept (C) included studies that described or evaluated Occupational Therapy interventions that aimed to promote participation in everyday occupations (e.g. leisure, Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs)). This was decided due to the influence that occupational participation can have on health and wellbeing. It also aligns with the WHO's (2001) definition of participation, suggesting that participation relates to involvement in life situations which can affect various domains of function. For the purpose of this study, we employed a multifaceted definition of participation, focussing on interventions that explicitly stated the promotion of occupational participation, engagement and/or performance.

Interventions that focussed on specific skills, body functions or environmental factors were included if their assessments or outcomes were linked to promoting participation. This was decided as the WHO (2001) highlights the important dynamic interaction between participation, environmental factors, body structures, body function, personal factors and activities.

Multidisciplinary interventions were also included in the study if the Occupational Therapy role and findings were clearly described.

The context (C) for this review included studies published in the last decade (between 2008 and 2018) to capture current literature. This review included studies conducted in any geographical location, culture or setting if published in English language.

Prior to conducting the review, set inclusion and exclusion criteria were developed to assist in selecting relevant studies. These are listed below.

Inclusion criteria:

- Describe an adolescent intervention population (between 10 to 19 years of age).

- Describe or evaluate Occupational Therapy interventions aimed at promoting participation in everyday occupations.
- Multidisciplinary interventions that include Occupational Therapy input in which Occupational Therapy contributions can be isolated.
- Studies must be peer reviewed.
- Articles must be published between 2008 and 2018.

Exclusion criteria:

- Studies that do not describe a specific adolescent intervention population (between 10 to 19 years of age).
- Studies without an intervention focus aimed at promoting participation in everyday occupations.
- Studies focussing on other aspects of the Occupational Therapy role (i.e. assessments, models and approach articles were excluded).
- Studies not specific to Occupational Therapy or multidisciplinary studies where the Occupational Therapy contribution cannot be isolated.
- Conference papers, abstracts, commentaries and grey literature.
- Studies published before 2008.
- Studies not published in English language.

Information sources and search strategy

A search strategy was developed with the assistance of an academic university librarian. Keyword and MeSH terms were created to capture pertinent articles which were consistent with the thesaurus of each data base. See Table 1 for an outline of the key search terms used. The following electronic databases were searched: Cochrane, Embase, MEDLINE, OTSeeker, Ovid

Emcare, PsycINFO, Scopus and Web of Science. The search was run on the 3rd of February 2019. There was no search limit set for the language of the studies, though articles were removed at full text screening if they were not in English due to time and resource constraints required to translate them. Grey literature was not searched as peer reviewed papers were considered more credible in answering the review question. The reference lists of yielded articles were pearled to locate further relevant studies that may have not been captured from the database searches. All pearled articles underwent the same study selection processes (described below) as the articles obtained from the database searches.

Table 1 Key search terms

Population:	Concept One:	Concept Two:
Adolescen*	OT intervention*	Activities of daily living
Teen*	Occupational therap*	Activities of daily life
Youth	OT	Everyday occupations
Child		Everyday activities
		Daily roles
		Education
		Life skills
		Work
		Employment
		Sleep
		Leisure
		Out of school activities
		School
		Play
		Sport
		Social activities

Study selection

All articles were imported into Covidence[®] Online Program where duplicates of studies were removed and the screening process occurred (Covidence, 2016). Two independent reviewers (either CC, KB or JK) screened the titles, abstracts and full texts to determine if each article met the appropriate inclusion and exclusion criteria to be included/excluded (Tricco et al., 2018). Any conflicts or uncertainty that occurred were resolved by a third reviewer or by discussions to reach full consensus.

Data charting, integration and synthesis

A charting table was created to capture and chart key information from articles (Peters et al., 2015). The information extracted from the studies included: authors, type of study, year of publication, country of origin, aim/purpose, participants, area of practice, intervention type, types of occupations focussed on, intervention setting, outcomes measures and findings. The primary researcher (CC) extracted the data from the articles and input the data into the charting form. A second reviewer (KB or JK) then confirmed the data before moving to the next stage. Conflicts were resolved by discussions between the review team members, which led to full agreement on the content of the data extraction. The reviewers then identified key features across the literature, which included the types of interventions used, the occupations focussed on, the client group, the outcome measures used and the outcomes of the interventions. Two independent reviewers (CC, KB or JK) categorised and agreed on each type of occupation according to the American Occupational Therapy Association (AOTA) framework (AOTA, 2014). The quality of the studies were not appraised as the scoping review aimed to provide a broad overview of the literature regardless of the evidence quality (Peters et al., 2015).

Results

Search results

The results from the database and pearling search yielded 3182 articles after duplicates were removed. The title and abstracts of the 3182 articles were screened for inclusion, this process led to the exclusion of 2946 articles predominantly due to the study population groups, the article type and the articles not being intervention focussed. The full text of the remaining 236 articles were reviewed to ensure that they met the inclusion criteria. Following full text review, 210 articles were excluded as they were either conference abstracts (n=84), or had non-adolescent populations (n=42), or did not have a clear Occupational Therapy intervention focus (n=35) or were written in a language other than English (n=24). From the full text screening, 26 articles were included in the review and underwent data extraction. See Figure 1 for the selection process, based on the PRISMA – Individual Participant Data Flow Diagram (Moher et al., 2009).

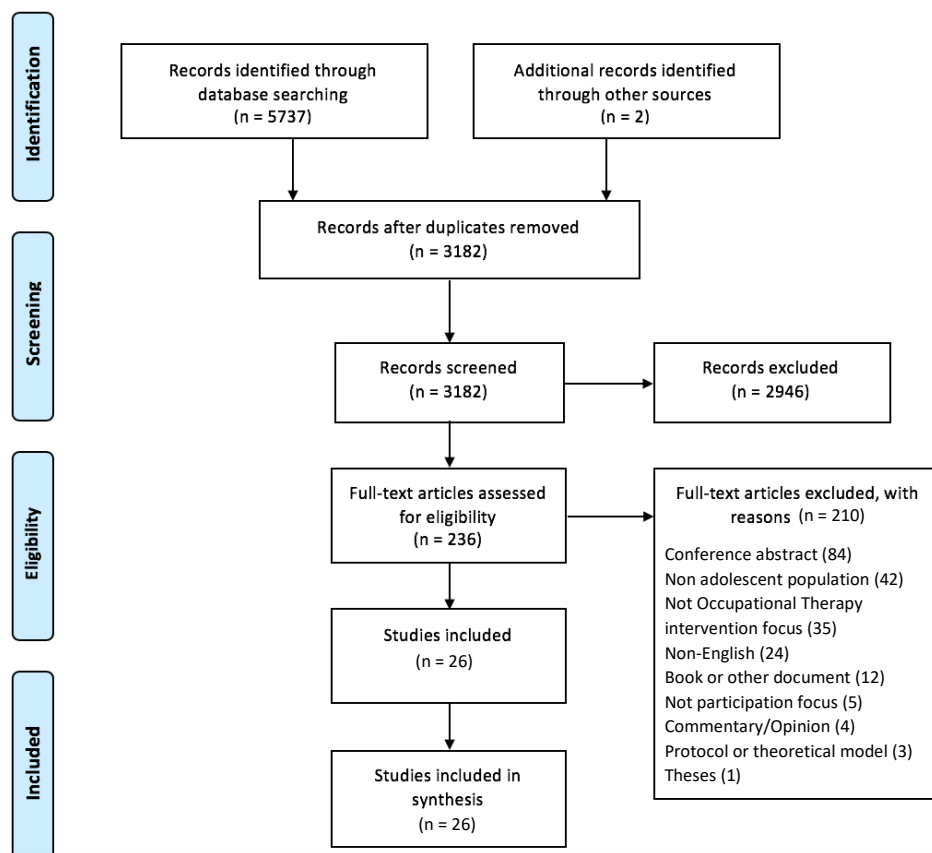


Figure 1: PRISMA 2009 flow diagram (adapted from Moher et al. 2009, p.8)

Descriptive overview of studies included

As outlined in Table 2 (attached as Appendix 1), a majority of the studies were published between 2014 and 2017 (n=20). The studies were conducted across various countries including the United States (n=9), Canada (n=5), Australia (n=4), Asia (n=2), New Zealand (n=2), Brazil (n=1), Netherlands (n=1), Pakistan (n=1) and Ireland (n=1). Five studies were conducted in multiple settings (e.g. in client's homes and at school). Overall, the most commonly reported setting was school (n=14) and was followed by clinic (n=7) and the home (n=6). Four studies reported a community setting and two reported being conducted in juvenile correction facilities. A majority of the retrieved studies related to physical disabilities (n=7), followed by autism

spectrum disorder (n=6). Other conditions included: attention deficit hyperactivity disorder (n=1), diabetes (n=1), acquired brain injury (n=1), obsessive compulsive disorder (n=1). One study included various client groups with social, emotional, behavioural and learning difficulties (n=1). Another included clients with intellectual and/or developmental disabilities (n=1). Seven studies focussed on health promotion including play and life skill development for incarcerated adolescents (n=2), emotional wellbeing for students presenting with subclinical symptoms of mental illness (n=2), school integration for refugees (n=1), physical activity for school students, (n=1) as well as sexual and reproductive health (n=1). A greater portion of studies reported interventions that were provided in individual, one on one, settings (n=14) whilst another eleven studies described a group setting. One paper reported a combination of group and individual settings.

Various research designs were reported (see Table 2 for a more detailed description) including mixed methods (n=10), quantitative (n=9), and qualitative (n=6), with one paper being descriptive in nature (i.e. described the intervention but did not include a formal research component). The sample size of studies ranged from 1 to 295 with a majority of studies (n=12) including less than 10 participants and only four studies with over 50 participants. There were two randomised controlled trials, with pre-post designs (n=11) and multiple baseline designs (n=2) also featuring.

Key features of the studies

The findings of the study are presented in regard to the different features of the interventions. Firstly, an overall description of the types of interventions is given, followed by the occupation types, methods used and the intervention outcomes.

Types of interventions

While all studies focused on participation, a diverse range of interventions were described, with environmental modification, transition planning (for adulthood), social participation, upper limb therapy, behaviour management and mental health promotion featuring. Examples are provided of how these interventions were linked to participation in occupation.

The most commonly reported type of intervention focussed on environmental modifications (n=6). However, three of these studies reported the same intervention program, named the Pathways and Resources for Engagement and Participation (PREP). The PREP intervention program aims to improve participation in community leisure occupations for clients with physical disabilities (Anaby et al., 2018; Anaby et al., 2015; Anaby et al., 2017). The PREP intervention involves working with clients and families to identify and remove environmental barriers, build upon supports that promote participation and to help families and clients develop their skill sets to problem solve barriers to participation (Anaby et al., 2018; Anaby et al., 2015; Anaby et al., 2017).

All six environment focussed papers included a capacity building element, aiming to teach clients the skills to recognise and remove environmental barriers themselves. Activity modification was also reported in 50 per cent (n=3) of these environmental based interventions. For example, the Project Teens Making Environmental and Activity Modifications intervention involves assessing and modifying activity demands (i.e. the number of rules involved in a game) to promote participation (Kramer et al., 2014).

Transition planning interventions were also commonly described (n=4), which promote life skill development to assist in the successful transition from adolescence to adulthood. These papers focussed on assisting clients in developing pre-vocational skills. Two transition studies

targeted clients with autism spectrum disorder and focussed on assisting clients in preparing to leave school (Hatfield et al., 2017; Tomchek et al., 2017). Tomchek et al. (2017) described a goal and treatment plan that assisted a client in preparing a meal independently. A further two transition papers utilised play and other activities of client's interest to promote community integration for at risk adolescents (Shea & Jackson, 2015; Shea & Siu, 2016).

Social participation was targeted in four papers which all described using social skill training, with three of these focussing on supporting clients with autism spectrum disorder to maintain friendships and effectively communicate with others (Cheung et al., 2018; Gutman et al., 2010; Rodger et al., 2008). One paper reported a refugee client group with a focus on building social capacity to support school integration (Copley et al., 2011).

Upper limb therapy was reported in two papers. One paper targeted clients with cerebral palsy and the other focussed on a single client with an acquired brain injury. Although both papers focussed on improving performance at a body function level, they described outcomes and assessments that indicated implications for participation in daily tasks (i.e. hand hygiene and use of communication aids) (Janssen et al., 2012; Wesdock et al., 2008). Wesdock et al. (2008) reported on hand therapy interventions involving neuromuscular electrical stimulation, muscle stretching, scar management, taping, splinting and functional exercises (i.e. folding towels, pinching with tongs, buttoning clothing and carrying items from the fridge). Janssen et al. (2012) utilised a virtual group therapy program that targeted multidisciplinary goals relating to upper limb skills, social participation and cognition (i.e. improving bilateral upper limb use, communication in a group and ability to concentrate in a group activity).

Interventions involving behaviour management techniques were reported (n=2). This included a Cognitive Behavioural Therapy intervention aimed to assist clients with obsessive

compulsive disorder to externalise and manage disruptive symptoms and behaviours that affect participation in social and community occupations (Söchting & Third, 2011). The second paper described an intervention plan for a client with cerebral palsy and a suspected intellectual disability, aimed at promoting participation through reinforcement, shaping and behavioural practice (Mahmood & Jabeen, 2017).

A mental health promotion focus was included in two papers aimed at assisting clients presenting with mental illness symptoms to develop healthy behaviours, routines, and habits that support self-esteem and participation (Tokolahi et al., 2016; Tokolahi et al., 2018). Another paper focused on health promotion, specifically relating to school students' participation in sexual and reproductive health education (Gontijo et al., 2016), whilst a further paper reported on promoting physical activity for students via classroom bicycle desks (Fedewa et al., 2017). Two papers focussed on building client's self-management skills with one describing the use of a goal related occupation-based activities to promote a client's self-management of their diabetes (Piven & Duran, 2014). The other reported teaching students with social, emotional, behavioural and learning difficulties to self-manage their behaviour through sensory integration techniques in order to improve school participation (Mahmood & Jabeen, 2017). Additional interventions included ADL training, specifically hand washing via video modelling (n=1) (Campbell et al., 2015) and an executive function training program using games and activities focussing on memory, planning and monitoring (n=1) (Chaimaha et al., 2017).

Types of occupations

The types of occupations promoted were categorised by the AOTA framework (AOTA, 2014). The majority of the studies described interventions that had a single occupation focus (n=15). For example, Cheung et al.'s (2018) paper explores a social-cognitive group program

designed to promote skill development to support social participation. Over a third (n=11) of the intervention papers focussed on promoting participation in multiple types of occupations. Rodger et al.'s (2008) social and organisational skill intervention paper included a range of specific client goals such as getting ready for school, completing homework and managing behaviour.

Overall, a majority of the papers focussed on promoting participation in IADLs (n=13), with many of the interventions emphasising independence in activities such as cooking and maintaining healthy routines. Social participation was also emphasised in over a third of the articles (n=12), with the majority of these studies being conducted in group settings (n=8) and four involving clients with autism spectrum disorder. Leisure was targeted in eight articles, with seven of these reporting clients with physical disabilities and six articles prescribing environmental modifications. Participation in ADLs was targeted in seven articles and included personal hygiene tasks (Mahmood & Jabeen, 2017; Rodger et al., 2008; Tomchek et al., 2017; Wesdock et al., 2008) and dressing (Mahmood & Jabeen, 2017; Rodger et al., 2008; Wesdock et al., 2008). Education including school participation and integration was emphasised in seven articles, with two focussing on behaviour management as a means to improve adolescents' participation in classroom learning (Mac Cobb et al., 2014; Mahmood & Jabeen, 2017). Other occupations targeted included: work (n=5), in which the development of pre-vocational skills was focussed, as well as rest and sleep (n=2).

Intervention strategies

Approximately one third (n=9) of the papers reported involving parents directly in the interventions. For example, the PREP program reported in three studies, involved coaching parents to recognise environmental barriers and implement strategies to address these (Anaby et al., 2018; Anaby et al., 2015; Anaby et al., 2017). One paper also reported targeting teachers in

the intervention to support them to develop classroom systems that promote student self-regulation (Mac Cobb et al., 2014). Another study included a separate program that involved educating parents, peers and school staff in problem-solving and strategy development to promote continuous improvements in executive functioning and academic performance (Chaimaha et al., 2017).

One common trend across the papers involved technology in the intervention administration (n=5). Two papers reported using video-modelling methods to teach adolescents personal hygiene skills (Campbell et al., 2015; Tomchek et al., 2017), whereas Janssen et al. (2012) described the use of technology to simulate group games in upper limb rehabilitation. Telehealth defined as the ‘provision of health care to clients via telecommunication’ (Australian Government Department of Health, 2015) was reported in two articles. Hatfield et al. (2017) demonstrated the use of the internet to administer a transition to work intervention for adolescents and their families, while Chaimaha et al. (2017) demonstrated a multimodal delivery using computer, telephone and paper-based activities.

Outcome measures

Standardised outcome measures were evident in just under half of the articles. A majority of the reported outcome measures related to goal achievement (n=13). One of the most commonly reported goal measurements was the Canadian Occupational Performance Measure (COPM) (n=6). The COPM is a standardised assessment tool that enables clients to rate their own performance in selected activities (Law et al., 2014). Six articles also reported utilising this tool to formulate and prioritise intervention goals. The majority of papers described the involvement of clients in intervention goal setting (n=15). Eight of these studies suggested the involvement of adolescents, while a further seven revealed both client and family involvement. Another

standardised tool used included the Goal Attainment Scale (GAS) (n=4) and involved clients and/or families rating if, and how well, clients' intervention goals were met. A further two articles reported measuring goal achievement, however, they did not suggest using a specific evaluation tool (Hatfield et al., 2017; Tomchek et al., 2017). The Patient Specific Complaints-list was utilised in one study to assess client's reported ease or difficulties in tasks and goal achievement (Janssen et al., 2012).

In addition to these measures of goal achievement, studies reported outcome measures relating directly to improvements of occupational performance (n=11), including the use of informal observations of occupational engagement conducted by therapists (n=5). Standardised performance scales (n=3) including the Participation and Environment Measure for Children and Youth, the Pediatric Evaluation of Disability Inventory (self-care section) and the Performance Quality Rating Scale were also utilised. Two papers additionally described the level of independence in tasks as an indication of performance (Campbell et al., 2015; Tomchek et al., 2017).

Many studies evaluated interventions from a range of participants' perspectives including adolescents themselves (n=10), parents/guardians (n=5), Occupational Therapists (n=5) and school staff (n=5). Perspectives were commonly obtained using interviews (n=6), questionnaires (n=5) and surveys (n=2). For example, Hatfield et al. (2017) utilised online surveys to capture allied health staff, parent and adolescent perspectives of a transition planning intervention.

Outcomes

The majority of the papers reported positive outcomes (n=26). For example, Campbell et al.'s (2015) executive function focussed intervention was rated with high satisfaction by parents. In addition, Anaby et al. (2016) reported clinically significant improvements in COPM scores for

participants following an environmental modification intervention. However, mixed results were reported in seven papers. For example, Piven and Duran (2014) reported major improvements in diabetes self-efficacy and exercise behaviours, however, noted declines in illness intrusiveness ratings and social limitations. These declines reflect the client's improved understanding of their condition and its significance (Piven & Duran, 2014). See Table 2 for further details.

Discussion

This scoping review of 26 papers provides a description of various Occupational Therapy interventions that target adolescents' participation in daily occupations including work, education, social participation, ADLs and IADLs. Evidence shows that there is a strong emphasis on environmental modifications, transition planning, social skill training and upper limb function that target clients with various conditions including physical disabilities and autism spectrum disorder. Key features of the interventions were also highlighted such as collaborative goal setting, parent involvement and the use of technology in intervention administration.

Many studies revealed a strong focus on promoting functional independence in various occupations. A majority of these articles targeted adolescents' participation in IADLs and ADLs including managing healthy routines, feeding, dressing and personal hygiene. Other prominent foci included the development of pre-vocational skills, social skills and community integration in order to improve participation. As suggested by Mui Lim and Jones (2017), adolescence is a period when individuals experience occupational transition and develop the capacity to take on adult roles and responsibilities including moving out of home, gaining employment and managing relationships. Hence the articles' strong emphasis on promoting independence in occupations such as work, personal care, social participation and health management, support the occupational transitions occurring during adolescence.

A common feature across the studies was the use of client self-chosen goals and the involvement of adolescents in intervention evaluation. Many studies described a collaborative goal development approach, often facilitated by the COPM, where intervention goals were formulated with direct involvement of adolescents and their families. Unsurprisingly, a commonly reported outcome measure included client's goal achievement indicating that the interventions were designed to target client's individual needs. A collaborative, client centred approach was deemed important during goal setting and intervention planning to promote clients' motivation to engage in therapy and to encourage the longevity of outcomes (Enemark Larsen et al., 2018). Adolescents were frequently involved in the evaluation of interventions, with many studies aiming to seek their perspectives of intervention programs. Adolescence is a period when individuals begin to develop the ability and insight to reason rationally and plan for the future, particularly in contrast to younger children (Moshman, 2011). Hence the involvement of clients in goal setting and intervention evaluation reflects the cognitive development of adolescents.

The review indicated a strong emphasis on parent involvement in intervention planning and evaluation. Parents were commonly described as being involved in goal setting procedures and their perspectives of interventions, regularly sought. This is consistent with the family centred practice described in the American Occupational Therapy Association's (AOTA) (2014) Domain and Process which is used to guide therapists. The AOTA (2014) suggests that practitioners should involve caregivers, family members and other stakeholders in identifying and prioritising goals for intervention. Interestingly, parent collaborative practice appears to be a trend in Occupational Therapy literature typically addressing young children (Costa et al., 2017;

Kruijsen-Terpstra et al., 2014). However, this scoping review has also highlighted its prevalence with adolescents.

The use of technology in intervention administration was also noted in some articles. Technology, including video modelling and virtual reality, was suggested to be useful in delivering interventions to adolescents (Campbell et al., 2015; Hatfield et al., 2017; Janssen et al., 2012, Tomchek et al., 2017). This is an interesting contrast to the common conception that technology negatively impacts adolescents' occupational participation, with literature reporting a link between technology use and increased sedentary behaviour (Rosen et al., 2014). Articles highlighting Occupational Therapy interventions that address this common societal concern of technology (as a negative impact) were not found and could be a potential area for future practice and research. In addition, the use of telehealth with interventions for adolescents (Hatfield et al., 2017; Chaimaha et al., 2017) is a worthwhile consideration for this client age-group, who may display more independent and focussed behaviours needed for telehealth sessions, compared to younger children.

Although the results covered a variety of interventions and occupations that targeted clients with a range of conditions, it appeared that there were some areas not well documented. For example, driving and home management occupations were not reportedly targeted in the articles. Case-Smith and O'Brien (2014) suggest that these are important occupations to consider for this age group, as individuals during this period begin to learn to drive and develop the skills to maintain their own home (e.g. cleaning and caring for a garden). There also appeared to be a lack of emphasis on assisting clients in managing the changes associated with puberty and the development of self-identity. As these tasks are unique and potentially challenging for adolescents, particularly those with disabilities, they are important areas to address.

There appeared to be limited reports of interventions that promoted participation for clients with mental health conditions or disorders which may commonly occur during adolescence. Clients with subclinical symptoms of anxiety and depression were reported in two articles. This might be due to the review's strict focus on occupational participation and the exclusion of multidisciplinary articles where the Occupational Therapy contributions could not be isolated.

Furthermore, many of the studies had low participant numbers and there were limited gold standard robust research designs, such as randomised controlled trials. This may be reflective of the nature of participants (i.e. people living with illness or disabilities which can have individual/varied impact) and the settings (rehabilitation or community settings where large numbers are not possible). Therefore, consideration of other experimental designs such as single case experimental designs are recommended.

Practice Implications

This review uncovered currently published research in the area of interventions that promote occupational participation of adolescents, which can guide service development and design for this age group. In particular, a focus on promoting functional independence, inclusion of the adolescent and family in goal setting and service evaluation and the use of technology, have been uncovered.

Review Limitations

This scoping review focussed only on articles that reported participation focussed interventions, specifically targeting adolescents (aged between 10 to 19 years), i.e. articles reporting both child and adolescent clients were not considered for this review. Additionally, only articles published in English language were included. Future reviews that include

assessments and other roles of Occupational Therapists (such as case management), would further expand the understanding of existing services to this client group.

Conclusion

This review included 26 studies which revealed a range of intervention types and features that support adolescents' participation in everyday occupations. Interventions that focus on promoting functional independence in the areas of work, personal care, social participation and health management were uncovered. Features of interventions include parent and adolescent involvement and the use of technology.

Key Points for Occupational Therapy

- A variety of Occupational Therapy interventions for adolescents have been identified in this review to guide service development and design.
- A strong intervention focus on functional independence was uncovered.
- A common feature of interventions for adolescents include client and family participation in goal setting and service evaluation.
- The use of technology was identified as a feature of interventions for adolescents

Conflicts of Interest

There are no conflicts of interest to declare for this study.

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Appendix 1. Table 2 Characteristics of included papers

Author, year and country	Aim	Study design and methods	Target population and sample size	Intervention	Outcome Measure(s)	Results/findings	Type of Occupation	Setting
Anaby, Law, Teplicky, & Turner, 2015. Canada.	To gain Occupational Therapists' perspectives of the Pathways and Resources for Engagement and Participation (PREP) approach.	Qualitative .	N=12 Occupational Therapists after administration of PREP to 10 adolescents between 12 to 17 years of age with physical disabilities.	<ul style="list-style-type: none"> • Environmental modifications to promote community leisure participation • PREP, a 12-week individual program • Guided by client chosen goals • Involved parent and client coaching to teach them to identify environmental barriers and develop strategies to remove these. 	<ul style="list-style-type: none"> • Semi structured interviews. 	Therapists highlighted the benefits of providing interventions within client's own environment. Barriers and facilitators to this method included physical factors i.e. physical accessibility and other aspects i.e. attitudinal, social and institutional factors.	Leisure	Home and community
Anaby, Law, Majnemer, &	To assess the	Mixed methods,	N=6 adolescents,	<ul style="list-style-type: none"> • Environmental and 	<ul style="list-style-type: none"> • COPM 	Clinically significant	Leisure	Home and

Feldman 2016. Canada.	effectiveness of environment-focussed interventions on participation of adolescents with physical disabilities.	interrupted time series design with pre- and post-tests.	14 to 16 years of age with physical disabilities.	<p>activity modifications to promote community leisure participation</p> <ul style="list-style-type: none"> • Guided by client chosen goals, developed using the Canadian Occupational Performance Measure (COPM) • PREP, a 12-week individual program consisting of 4 to 12 sessions • Involved parent and client coaching to teach them to identify environmental barriers and develop strategies to remove these. 	<ul style="list-style-type: none"> • Participation and Environment Measure for Children and Youth • KIDSSCREEN-27 to measure quality of life • Parent satisfaction questionnaire. 	improvements in COPM performance scores were evident for all goals. Improvements in participation patterns and quality of life were observed. Environmental barriers related to transport and physical accessibility.		community
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Anaby, Mercerat, & Tremblay, 2017. Canada.	To explore parents' perspectives of the PREP approach.	Qualitative .	N=12 parents of adolescents between 12 to 18 years of age with physical disabilities.	<ul style="list-style-type: none"> • Environmental modifications to promote community leisure participation • PREP, a 12-week individual program consisting of 4 to 12 sessions • Guided by client and family chosen goals • Involved parent and client coaching to identify environmental barriers and develop strategies to remove these. 	<ul style="list-style-type: none"> • Semi-structured interviews. 	Parents highlighted that the program not only facilitated performance success for their children in various domains i.e. physical, social and emotional, but also recognised that their own needs were met.	Leisure	Home
Anaby, Law, Feldman, Majnemer, & Avery, 2018. Canada.	To examine the effectiveness of the PREP approach on promoting	Quantitative, interrupted time series design with	N=28 adolescents, 12 to 18 years of age with moderate	<ul style="list-style-type: none"> • Environmental modification to promote community leisure participation 	<ul style="list-style-type: none"> • COPM. 	A significant intervention effect was noted in performance of all clients and activities.	Leisure	Home

	participation for adolescents with physical disabilities.	multiple baselines.	physical disabilities.	<ul style="list-style-type: none"> • PREP, a 12-week individual program consisting of 4 to 12 sessions • Involved parent and client coaching to teach them to identify environmental barriers and develop strategies to remove these • COPM used to guide goal development with clients and family 		Performance continued to increase after intervention. Common functional challenges included managing emotions, communicating and using hands during activities.		
Campbell, Morgan, Barnett, & Spreat, 2015. United States.	To explore the use of video modelling to teach hand washing to adolescents with Autism Spectrum Disorder (ASD).	Quantitative, multiple baseline study.	N=3 adolescents with ASD aged (one 17 and two 19 years of age).	<ul style="list-style-type: none"> • Video modelling to promote hand washing skills • Included one 10 to 15-minute individual session per week for four weeks. 	<ul style="list-style-type: none"> • The level of independence revealed using task analysis/observations. 	All participants increased their independence in hand washing. Two participants demonstrated a substantial increase in hand washing skills, whilst one participant	Activities of Daily Living (ADLs)	School

						showed a modest skill increase.		
Chaimaha, Sriphetcharawut, Lersilp, & Chinchai, 2017. Asia.	To examine the effectiveness of an executive function training and collaborative program, for students with Attention Deficit Hyperactivity Disorder (ADHD).	Quantitative, one group pre-test–post-test design.	<p>Group 1: N=8 students with ADHD and Executive Function Deficits, 10 to 12 years of age</p> <p>Group 2: N=8 parents, N=5 teachers, N=1 principal, N=8 peers</p>	<p>Two intervention programs:</p> <p>(a) Executive function training program:</p> <ul style="list-style-type: none"> • Computer and paper administered format • 3 x hourly, individual sessions were conducted per week for 7 weeks • Activities targeted working memory, planning and monitoring <p>(b) Collaborative program for parents, school staff, and peers:</p> <ul style="list-style-type: none"> • Using weekly phone calls 	<ul style="list-style-type: none"> • Parent and teacher satisfaction questionnaires • Clients academic performance via their Grade Point Average <p>Executive function measured using:</p> <ul style="list-style-type: none"> • Tower of London-Drexel University • Wechsler Intelligence Scale for Children-Revised Digit Span Subtest • Behaviour Rating Inventory of Executive Function. 	Results indicated improved executive functioning and school performance. Statistically significant improvements in working memory, planning and self-monitoring were demonstrated. Parents and teachers both indicated high satisfaction with the program.	Education	School

				and meetings <ul style="list-style-type: none"> • Aimed to train supporters in problem solving and strategy development. 				
Cheung, Siu, Brown, & Yu, 2018. Asia.	To explore the efficacy of a social-cognitive intervention program across cultural settings.	Mixed methods using pre and post assessments.	N=7 male adolescents with ASD, 12 to 14 years of age.	<ul style="list-style-type: none"> • Friendship Lab, a social-cognitive group intervention designed to teach clients how to think and infer regarding others • Guided by client and parent developed goals • Included a parent meeting for future planning • 10 x once per week sessions were used. 	<ul style="list-style-type: none"> • The Chinese Version Social Skills Improvement System Rating Scales • Theory of Mind Inventory • Goal attainment using the Goal Attainment Scale (GAS) • Parent perspectives via focus group interviews. 	Significant gains in Theory of Mind, knowledge and goal performance were observed. Further gains were reported two months after intervention. Parents noted increases in social skill knowledge and frequency of positive social behaviour. Parents suggested that a more intensive program would be beneficial.	Social participation	School

Copley, Turpin, Gordon, & McLaren, 2011. Australia.	To report the development of an Occupational Therapy program to facilitate school participation for students from refugee backgrounds.	Qualitative, action research design.	N=4 Occupational Therapists, N=9 school staff members.	<ul style="list-style-type: none"> • A social skill intervention program aimed to support classroom participation and availability for learning • Group intervention program guided by client chosen goals. 	<ul style="list-style-type: none"> • Questionnaires and interviews to reveal participants perspectives. 	The program changed considerably across the cycles, from mastery of classroom tasks to the development of social capacities to support classroom participation. This method promoted better alignment between the therapist and the school staff.	Education and social participation	School
Fedewa, Abel & Erwin, 2017. United States.	To investigate whether stationary bicycle desks (FitDesks) used in high school enhance physical activity.	Mixed methods with randomised assignment to control and experimental group.	Experimental group: N=11 Control group: N=6 Both groups from a high-risk school setting (between 14 to 18 years of age).	<ul style="list-style-type: none"> • Stationary bicycle desks (FitDesks) in classrooms • The intervention group used the desks for half of their lesson times over a year • The control group received no 	<ul style="list-style-type: none"> • The amount of time and intensity of physical activity (via accelerometers) • Miles, resistance, time and calories burnt measured via the FitDesks • Feasibility measured using student questionnaires 	Students using the bicycle desks improved their engagement in physical activity by spending less time in sedentary activity, further time in moderate-to-vigorous	Instrumental Activities of Daily Living (IADLs)	School

			N=3 teachers.	change to their seating.	and teacher interviews.	physical activity and improved in each of the other physical activity outcomes. Participants noted advantages and limitations of using the desks but overall were favourable of their use.		
Gontijo et al., 2016. Brazil.	To describe an Occupational Therapy intervention process aimed at sexual and reproductive health promotion for adolescents.	Qualitative with pre, during and post data collection.	N=58 adolescents, 13 to 17 years of age, enrolled in basic education.	<ul style="list-style-type: none"> • Sexual and reproductive health promotion, group program with a participatory method • Includes educative activities i.e. puzzles, storytelling, mime and board games • 5 x once per week sessions 	<ul style="list-style-type: none"> • Adolescent questionnaire regarding increased knowledge • Observations of student's behaviour • Focus group interviews to gain adolescents perceptions. 	The observations and feedback suggest that a participatory method involving rapport building and dialogue supports engagement in health promotion education tasks for adolescents. Participants demonstrated increased knowledge of	IADLs	School

						sexual and reproductive health information.		
Gutman et al., 2014. United States.	To determine if a motor-based role-play intervention can enhance social skill use in a nonverbal adolescent with high functioning ASD.	Quantitative, baseline, weekly and a 3 month follow up case report.	N=1, 14-year old female with high functioning ASD.	<ul style="list-style-type: none"> • An individual motor-based role play, social skill program • Involves healthy self-care habits and social skill development • 4 x once per week sessions. 	<ul style="list-style-type: none"> • Evaluation of Social Interaction to measure social skill interaction quality and frequency. 	The quality and frequency of nonverbal social skill use increased significantly i.e. maintaining eye contact and using body language. No substantial changes in verbal use were observed. Teachers and parents reported increased self-initiated communication.	Social participation	School
Hatfield, Murray, Ciccarelli, Falkmer, & Falkmer, 2017. Australia.	To assess the viability and feasibility of the Better Outcomes & Successful Transitions for Autism (BOOST-A™) for	Mixed methods, pilot study	Pilot A: N=6 adolescents with ASD, their parents, and the professionals who worked with them.	<ul style="list-style-type: none"> • The BOOST-A™ online transition planning program aimed to help preparation for leaving school by developing 	<ul style="list-style-type: none"> • Online surveys to capture adolescents, parents and allied health practitioner's perspectives • Reflection on achievement of goals. 	The majority of participants rated the program as an appropriate, feasible and viable transition planning tool. The program was rated as	Work	Home and clinic

	adolescents with ASD.		Pilot B: N=88 allied health professionals (Occupational Therapists, speech pathologists, and psychologists).	plans for employment <ul style="list-style-type: none"> • Individual sessions delivered via internet • Clients and parents involved in goal setting, reviewing and forming future plans. 		helpful, realistic, meaningful, relevant and easy to understand.		
Imms, Mathews, Richmond, Law, & Ullenhag, 2016. Australia.	To determine the feasibility of an environmental and activity modification program to promote leisure participation for adolescents with physical impairments .	Quantitative, pre-test, post-test pilot study design.	N=8 adolescents, 12 to 19 years of age with physical impairments .	<ul style="list-style-type: none"> • Activity and environment modification program • Clients and parents involved in establishing goals (via the COPM), measuring and addressing environmental barriers and building activity performance skills. • Both group and individual sessions 	<ul style="list-style-type: none"> • GAS • COPM. 	Majority achieved their participation goals, while four demonstrated less substantial progress towards their goals. The natural environment, government policies and transport availability were most frequently identified barriers to participation.	Leisure	Clinic, home or community

				delivered for (8 x once per week sessions).				
Janssen, Verschuren, Levac, Ermers, & Ketelaar, 2012. The Netherlands.	To describe the use of a Nintendo Wii structured group therapy in the rehabilitation of an adolescent with an acquired brain injury.	Mixed methods, pre and post measure case study.	N=1, 18-year-old with an acquired brain injury, hemiparesis, aphasia, behavioural issues, and attention difficulties.	<ul style="list-style-type: none"> • The GameLaB, a structured group program that uses a game format to target client developed goals • Focussed on upper limb rehabilitation , compensatory training, social and cognitive performance • 16 x once per week group sessions. • Two therapists (physical therapists, Occupational Therapists, speech and language therapists, or social 	<ul style="list-style-type: none"> • The Patient Specific Complaints- list to assess client's reported ease or difficulty in tasks and achievement of goals. 	Improvements in communication were observed i.e. improved use of speech techniques and non-verbal compensatory techniques. Improved concentration, motor control and use of affected arm were demonstrated.	Social participation	Clinic

				workers) coordinated sessions.				
Kramer, Roemer, Liljenquist, Shin, & Hart, 2014. United States.	To conduct a comprehens ive formative evaluation of the Project Teens making Activity and Environmen t Modificatio ns (TEAM) self- advocacy program.	Mixed methods, single group repeated measures design.	N=21 adolescents, 15 to 17 years of age with intellectual and/or Developmen tal Disabilities.	<ul style="list-style-type: none"> • Project TEAM, group program • Aims to teach clients to identify environmental barriers, generate modification strategies, and request accommodations in relation to client-chosen goals • Co-led by an Occupational Therapist and a youth specialist. • 2 x sessions were completed per week for 14 weeks. 	<ul style="list-style-type: none"> • Project TEAM knowledge test to reveal adolescents change in knowledge • The Child Occupational Self-Assessment • GAS • Observations of performance • Surveys to gain client perspectives. 	Participants showed a significant increase in their knowledge of environmental factors and modification strategies that influence occupational participation. No changes in applied problem solving were observed. Majority of participants attained at least one goal. Participants enjoyed the interactive and applied aspects however found some concepts and materials difficult to understand.	IADLs, leisure and work	School

Mac Cobb, Fitzgerald & Lanigan-O'Keeffe, 2014. Ireland.	To develop a class group program to promote behavioural management for a class with learning and behavioural challenges in a secondary school context of social disadvantage.	Mixed methods involving two sequential trials.	N=85 students, 12 to 13 years of age with social, emotional, behavioural and learning difficulties N=4 teachers	<ul style="list-style-type: none"> • Class group program promoting behavioural self-management via sensory integration • Teaches students to understand basic sensory integration theory to regulate their level of alertness in task • Teachers supported to develop self-regulating classroom systems • Trial one included 5 x once per week sessions. Trial two included 8 x once per week sessions. 	<ul style="list-style-type: none"> • Student and teacher questionnaires to seek their perceptions. 	Majority of students indicated that the program was enjoyable and relevant. Students gained an understanding of their behaviour and identified self-management strategies and indicated intentions to apply their strategies in class. Students recommended that all teachers be familiar with the techniques of the program. Teachers suggested that the content and strategies were appropriate.	Education	School
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Mahmood & Jabeen 2017. Pakistan.	To highlight the use of behaviour therapy techniques to devise the management plan of a client with CP.	Mixed methods, single case study with pre and post assessments.	N=1, 14-year-old boy with CP and suspected mild Intellectual Disability	<ul style="list-style-type: none"> • Behaviour modification techniques: reinforcement, shaping, chaining and behaviour practice • 23 x individual 40-minute sessions • Focussed on improving independent function skills i.e. problem-solving, money concept, fine motor skills and tying shoelaces. 	<ul style="list-style-type: none"> • Reports from teacher and family • Therapists perceived rating of client's performance and ability to complete tasks independently. 	Improvements were observed in various areas of function including academia, self-care (i.e. handwashing) and money concept. Less significant progress was reported in problem solving activities, likely due to client's lack of interest.	ADLs, IADLs, education and social participation	School
Piven & Duran, 2014. United States.	To examine the effect of occupation-based activities to improve diabetes self-management skills in a non-	Mixed methods, pre and post-test design.	N=1, 19-year-old adolescent with Type 2 Diabetes.	<ul style="list-style-type: none"> • Occupation-based, goal directed activities targeting self-management skills • Collaborative process guided by the Model of 	<ul style="list-style-type: none"> • COPM <p>Standardised measures of exercise behaviours, condition management, impact on daily life and social participation:</p> <ul style="list-style-type: none"> • The Exercise Behaviours questionnaire 	Major improvements were reported in the Diabetes Self-Efficacy Scale, Exercise Behaviour and in goal attainment of targeted behaviours. Declines were	ADLs, IADLs and social participation	Clinic

	adherent adolescent.			<p>Human Occupation and the COPM framework</p> <ul style="list-style-type: none"> • 2 x sessions per week for 8 weeks 	<ul style="list-style-type: none"> • The Diabetes Self-Efficacy Scale • The Adapted Illness Intrusiveness Ratings • The Social/Role Activities Limitations Scale. 	<p>observed on the Adapted Illness Intrusiveness Ratings and the Social/Role Activities Limitations Scale, likely a result of increased insight into the condition intrusiveness as a result of therapy.</p>		
Rodger, Ireland & Vun, 2008. Australia.	To report the findings of two exploratory case studies which used social skill interventions with clients with ASD.	Quantitative, single case study design with one replication and pre-post-tests.	N=2 male adolescents with ASD (10 and 12 years of age).	<ul style="list-style-type: none"> • Cognitive Orientation to daily Occupational Performance Measure • 10 x once per week individual sessions targeting social or organisational client-chosen goals (developed using the COPM) • Problem solving 	<ul style="list-style-type: none"> • COPM • Social Skills Rating Scale • Performance Quality Rating Scale • Motor performance was rated on a scale from 1-10. 	<p>Post-intervention measures showed improvements in social and organisational skills and transferral of these skills to home and school environments. Both children highly prioritised social goals and some organisational goals.</p>	ADLs, IADLs, social participation, education, rest and sleep	Clinic

				<p>strategies, role play, social stories and anger management were used</p> <ul style="list-style-type: none"> • Clients and parents were also trained in problem solving. 				
Shea & Jackson, 2015. United States.	To explore how at-risk adolescents, respond to client-centred and occupation-based Occupational Therapy.	Qualitative , pilot study.	N=5 at risk adolescents, 16 to 18 years of age	<ul style="list-style-type: none"> • The Occupational Therapy Training Program (OTTP), a weekly life skills group program • Involved engaging in developmentally appropriate play to address life skills i.e. pre-vocational exploration, communication, self-management and community access 	<ul style="list-style-type: none"> • One on one semi-structured interviews used to gain participant perspectives. 	Increased self-advocacy, and enhanced perception of participant's future were observed. Participants described the intervention as a non-prescriptive approach that validates the individual and may prove effective in serving the at-risk adolescent population.	IADLs, education, social participation, leisure and work	School, community and juvenile detention facilities.

				<ul style="list-style-type: none"> • Goals and strategies were developed in collaboration with client. 				
Shea & Siu, 2016. United States.	To explore the engagement of adolescent inmates in structured play activities to support interpersonal relationships, self-awareness and community transition.	Mixed methods pilot study.	N= 295, incarcerated adolescents, 14 to 18 years of age	<ul style="list-style-type: none"> • The OTTP, a weekly life skills group • Involved engaging in developmentally appropriate play to address life skills i.e. pre-vocational exploration, communication, self-management and community access • 6 months of once per week, one-hour sessions. 	<ul style="list-style-type: none"> • Occupational engagement measured using the Engagement in OTTP Activities Questionnaire • The Analysis of Group Activity Scale (created by researchers) used to assess content of worksheets and artwork. 	Participants reported high engagement in the program. Over 90% of the activities were complete and relevant to the session topics. Play activities could be a suitable way for Occupational Therapists to promote life skill acquisition for incarcerated adolescents.	IADLs, leisure, social participation and work	Juvenile detention centre
Sochting & Third, 2011. Canada.	To conduct a preliminary evaluation of the effectiveness	Quantitative, pre and post-test design.	N=7 adolescents with OCD, 14 to 17 years of age.	<ul style="list-style-type: none"> • CBT group program • Conducted by a clinical psychologist and 	Symptoms measured by: <ul style="list-style-type: none"> • The Yale-Brown Obsessive-Compulsive Scale 	Measures suggested clinical improvements in OCD symptoms for 5	IADLs and social participation	Clinic

	s of a Cognitive Behavioural Treatment (CBT) group protocol for adolescents with Obsessive Compulsive Disorder (OCD).			<p>Occupational Therapist</p> <ul style="list-style-type: none"> • 10 x once per week sessions • Involved: externalising symptoms by mindful detachment, exposure and response prevention, and refocusing on alternative, constructive behaviours following exposure. 	<ul style="list-style-type: none"> • The Beck Depression Inventory • The Beck Anxiety Inventory • Obsessive Beliefs Questionnaire. 	of 7 participants. The results supporting a group treatment format for adolescents with OCD.		
Tokolahi, Hocking & Kersten, 2016. New Zealand.	To describe the development and content of an emotional wellbeing, Occupational Therapy program for adolescents with subclinical anxiety.	Qualitative . Using four steps: reviewing theory, reviewing evidence, incorporating expert opinion and trialling.	<p>Expert opinion phase: N=18 adolescents, 11 to 13 years of age, N=4 teaching staff, N=4 cultural advisors,</p> <p>N=7 Occupational Therapists</p> <p>Trial phase:</p>	<ul style="list-style-type: none"> • Emotional wellbeing group intervention • 8 x 1-hour sessions • Aimed to educate clients about health promoting occupations and how to participate in, balance and sustain these 	<ul style="list-style-type: none"> • Feedback from therapists, cultural advisors, adolescents and school staff. • Observations of participation in the sessions. 	Feedback from participants was used to modify the program. The feedback suggested that overall, participants enjoyed the activities and intervention. The program proposes that adolescents can achieve	IADLs, rest and sleep, and social participation	School

			N=18 adolescents, 10 to 12 years of age with sub-clinical anxiety.	in daily routines. • Involved: warm-ups, skill development, skill practice and discussion about application to real-life.		positive emotional wellbeing by having the skills and knowledge to maintain healthy routines that include health promoting occupations.		
Tokolahi, Vandal, Kersten, Pearson, & Hocking, 2018. New Zealand.	To investigate an evidence-based Occupational Therapy intervention designed to increase participation in daily occupations to prevent symptoms of mental illness for adolescents in schools.	Quantitative, cluster-randomised controlled trial.	N=151 adolescents, 11 to 13 years of age, presenting with early symptoms of anxiety and depression, low self-esteem and/or poor participation in typical occupations.	<ul style="list-style-type: none"> • Emotional wellbeing group intervention • Aim to educate clients about health promoting occupations and how to incorporate these in daily routines • Involved clients and family in goal setting • 8 x once per week sessions 	<ul style="list-style-type: none"> • COPM • Rosenberg Self Esteem Scale Symptoms measured using: <ul style="list-style-type: none"> • The Multidimensional Anxiety Scale for Children • The Child Depression Inventory 2nd edition • The Revised Child Anxiety and Depression Scale • School Anxiety Scale. 	Significant positive effects of child-rated satisfaction with occupational performance and teacher-rated child anxiety. No evidence supported the effect of the intervention on anxiety and depression symptoms, self-esteem and wellbeing. Findings suggest that the program be delivered as an embedded	IADLs	School

						intervention involving parents and teachers.		
Tomchek, Koenig, Arbesman, & Lieberman, 2017. United States.	To summarise the evidence from published reviews on executive function targeted techniques and to present the application of evidence to a clinical case.	Descriptive, single case report.	N= 1, 17-year-old adolescent with ASD.	<ul style="list-style-type: none"> • Techniques: video modelling, visual supports, phone reminders, Goal–Plan–Do–Check method, problem solving supports, social skills group • Aims to target executive function skills i.e. organisation and time management • Uses COPM to guide client chosen goal development • 3 individual monthly sessions 	Not a formal research study but outcomes described: <ul style="list-style-type: none"> • Client’s participation in occupations • Level of independence in meal preparation • Social participation observations • Achievement of goals. 	Not a formal research study but described the following: improvements in social, ADL and prevocational goals and performance i.e. meal preparation, culinary club attendance, internship acquirement and friendship formation.	ADLs, IADLs, social participation and work	School

				<ul style="list-style-type: none"> • Included teacher collaboration. 				
Wesdock, Kott & Sharps, 2008. United States.	To evaluate hand function treatment planning and outcome documentation for adolescents with CP.	Pre-post quantitative descriptive case study.	N=3 male adolescents, 11 to 15 years of age with hemiplegic CP.	<ul style="list-style-type: none"> • Post-surgical, individual hand therapy • Involved: neuromuscular electrical stimulation, stretching, taping, scar management, wrist splinting, functional and fine motor exercises • Goals formed in collaboration with client and family. 	<ul style="list-style-type: none"> • GAS • The Pediatric Evaluation of Disability Inventory • Jebson-Taylor Test of Hand Function • Volkman's extrinsic finger flexor tightness test and digit extension • Examination of joints in the hand • Goniometric measurements of radial and palmar active and passive thumb web spaces • Strength using manual muscle testing • Grip strength using a Jamar dynamometer • Palmar and key pinch strength using a B&L Engineering pinch gauge 	Improvements were observed in client's wrist and finger biomechanics and active ROM. Post-surgical therapy was perceived to be undefined. The surgery and undefined therapy approaches appeared to have little influence on participation and activity. The study indicates that the management protocol should include specific postsurgical therapy plans.	ADLs, IADLs and education	Clinic

					<ul style="list-style-type: none">• Stereognosis using eight items• Two-point discrimination using a Touch-Test Two-Point Discriminator• Passive Range of Motion (ROM) tests• Upper limb muscle tone using the Ashworth scale• Dystonia, athetosis rigidity and spasticity were observed.			
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