

How is Guided Interaction Therapy, The Affolter Modell[®], Beneficial for Adults with Severe Impairments After Acquired Brain Injury: Protocol for a Scoping Review

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Abstract

Background: The prevalence of acquired brain injury is on a steady rise globally. This has important implications for individuals, their families, broader society, and even the socioeconomic landscape of countries. Addressing the complexity of these impairments is challenging, especially in individuals with severe impairments. Several health professionals highlight the Affolter Modell[®] as an effective method for enhancing basic perceptual and cognitive functions in relation to sensory stimuli processing, potentially impacting higher cognitive functions such as planning and problem solving in daily tasks. Unfortunately, the Affolter Modell[®] lacks scientific evidence, which hinders its widespread use in neuro-rehabilitation.

Objective: This protocol aims to explore the potential benefits of Guided Interaction Therapy (GTIT), the Affolter-Modell[®], for adults experiencing severe impairments after acquired brain injury.

Methods: The protocol uses a PICO framework (Population, Phenomenon of Interest, Context) to establish search algorithms for databases like MEDLINE, Cinahl, PsycINFO and EMBASE, and conducting searches in German national and regional library databases to find studies published in German and Switzerland. Two reviewers independently screen titles, abstracts and full-text articles using the confidence software to determine if they meet the inclusion criteria. Included studies undergo evaluation using a design-specific quality assessment template, i.e. the appropriate CASP checklist. Finally, the reviewers develop and pilot-test a data extraction template to ensure a systematic approach to data collection and analysis.

Results: The results will generate an overview of the existing knowledge on GTIT. The findings will clarify the documentation on GTIT, highlighting its potential integration into neurorehabilitation after ABI and specifying its applicability. Moreover, the results will shed light on any research gaps concerning GTIT.

Conclusions: This scoping review aims to raise awareness of the foundational knowledge underpinning GTIT. Additionally, it will serve as an initial phase in a larger study exploring the practice and evidence base on GTIT.

Keywords: Affolter Modell[®] • Guided Interaction therapy (GTIT) • Acquired Brain Injury (ABI) • Neurorehabilitation

Introduction

The rising global incidence of Acquired Brain Injury (ABI) carries important implications for individuals, relatives and society in general, and exerts a socioeconomic influence on countries as well [1]. In Denmark (with a total population of 5.9 million inhabitants), about 230,000 adults lived with consequences of ABI [2]. ABI is caused by strokes, traumas, tumours or infections [2]. The consequences of ABI may manifest as impaired sensory-motor and cognitive functions, alongside emotional and communicative disorders. These effects often impact body functions, activity, participation in daily living, and contextual components; varying based on the severity

and location of the brain injury. Impaired sensory-motor functions impact the patient's quality of life in general [3]. In the months following a stroke, a prevalent theme among individuals who have suffered a stroke (the majority of the ABI population) revolves around bodily changes. This often includes experiencing the body as being passive and foreign [4].

These descriptions emphasize how patients with ABI are keenly attentive to discovering new pathways for their bodies and recognize the body's importance in the process of relearning skills, engaging in learning and training situations, and arriving at a new understanding of their body and abilities [5]. Neurophysiologically, optimal learning outcomes are achieved through active participation, which creates a neuroplasticity change in the brain [6]. Besides altered motor skills, people with severe ABI often experience severe cognitive challenges. These challenges can include reduced attention, neglect, and disturbed body schema and reduced alignment, along with challenges in positioning themselves appropriately in relation to their surroundings. Additionally, cognitive or mental problems (reduced executive function, reduced ability to solve problems, reduced insight, etc.) may also manifest. These disturbances challenge various activities, such as mishandling tools, organizing tasks in an inappropriate order, getting stuck in the activity or using the same problem-solving strategy despite having shortly before recognized that it did not work [7].

Neurorehabilitation relies on knowledge and evidence-based approaches to reduce and compensate for perceived limitations in an individual's physical,

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psychological, cognitive and social functioning in order to "enable a meaningful life with the best possible activity and participation, coping and quality of life." [8]. To achieve a meaningful life, an individual often needs support or a foundation of physical and mental resources, enabling the individual to engage in social relationships and contextual interactions, thereby participating in everyday activities. Thus, treatment methods are needed that can support and train basic bodily processes taking place between the environment, the body and the brain, such as sensation, perception and cognition, -enabling individuals to rediscover their once familiar sensations and movements. This aids in their understanding and interaction with their surroundings. These bodily processes are essential foundations for all kinds of activities and social participation [7].

Addressing these issues in neurorehabilitation is challenging, yet several health professionals endorse the Affolter Modell® as an effective method. It is recognised for strengthening basic fundamental perceptual and cognitive functions tied to sensory stimuli processing, thereby influencing higher cognitive functions such as planning and problem-solving in everyday activities [9-11]. Health professionals suggest that the Affolter Modell® has a particularly beneficial effect on people grappling with a disturbed body schema and diminished perception and cognition [12]. Since the late 1990s, when intensive rehabilitating for people with severe brain injuries in Denmark commenced, the Affolter Modell® has been used, initially on the recommendation of the Danish Health Authority [13].

Unfortunately, the Affolter Modell® lacks scientific evidence [7] and it is not widely implemented across all neuro-rehabilitation units in Denmark. Consequently, in 2008, an intervention study was conducted at RHN. The study aimed to identify and investigate indications of behavioural changes caused by guided interaction therapy using the Affolter Modell® among people with low functional ability due to sustained severe brain injury [14]. The study identified four main groups of clinical changes in interaction behaviour following Guided Interaction Therapy (GTIT) labelled. These groups represent varying levels of perceptual organisation crucial for a person's ability to obtain, sort and process stimuli from their environment. This ability serves as a prerequisite for adapting appropriately and responding in any given situation. Similar results were found in a German study [15]. A pressing need exists for further exploration of the impact of the Affolter Modell®, especially its effect on functional capacity in people with severe ABI. In Denmark, current knowledge primarily stems from practical experience gained through courses and literature, primarily published in German and Switzerland. Aim to provide an overview of the existing knowledge of the benefits of using GTIT, the Affolter Modell®, for adults with severe impairments after ABI.

The Affolter Modell® and guided tactile interaction therapy: According to the Affolter Modell®, a severe decline in performing actions in everyday activities among persons with brain injuries stem from disrupted perception and processing of stimuli necessary to manage a specific task in a specific situation. The professional, who uses the Affolter Modell®, can optimize a person's skills for receiving, differentiating and processing stimuli from surroundings that are relevant and essential for active participation in selected everyday activities. Sensory organisation is a prerequisite for cognitive and motor function as it indirectly activates both. Simultaneously, this organisation significantly impacts the processing and coordination of senses.

The model emphasizes the importance of the tactile sense and kinesthetic senses, highlighting how the interaction between a person and their environment through touch contributes to active information search and processing, forming a crucial aspect of its analysis and treatment approach [16]. The tactile system of senses - encompassing touch, pressure, heat, cold and pain - plays a primary role in giving individuals access to connect with and recognize their surroundings [17]. In the Affolter Modell®, perception involves the person's active bodily exploration of surfaces and objects, which is considered essential for constructing understanding, solving problems and executing appropriate actions in everyday activities. The focus on active touch, as opposed to passive touch, through bodily interaction with surroundings is unique for the Affolter Modell®. The treatment method known as GTIT is applied within the framework of the Affolter Modell®. Developed by psychologists in close collaboration with various neurology specialists, the Affolter Modell®

represents an interdisciplinary approach involving therapists, nursing staff, teachers, relatives etc. [7].

GTIT involves collaboratively performing everyday activities alongside the person rather than for the person. The professional leads the person's hand or body through problem-solving activities drawn from daily life. Using GTIT makes it possible to optimise the person's skills and abilities to perceive tactile information, which is essential for experiencing and engaging in activities. GTIT operates on the hypothesis that by altering interaction conditions, it is possible to emphasize the tactile information this person would naturally seek if able to perform the activity themselves [9]. Thus, GTIT involves targeted problem-solving experiences with touch, focusing on interaction between the person and their surroundings in everyday activities. In the acute phase after an ABI, this could involve tasks related to personal hygiene, such as washing, applying deodorant and getting dressed.

Materials and methods

The scoping review will follow established methodologies for scoping reviews [18]. Furthermore, the scoping review will be reported using the scoping review PRISMA-SCR checklist [19]. An interdisciplinary team of researchers within the field of neurological rehabilitation will systematically identify, retrieve, review and synthesize relevant international evidence of the benefits of employing GTIT following the Affolter Modell® for adults with severe impairments after ABI.

Research strategy: The search for relevant literature will be conducted in two steps. First, a PICO framework (Population, Phenomenon of Interest, Context) will be established to define the search algorithms used in the databases MEDLINE, Cinahl, PsycINFO and EMBASE [20]. Search matrixes will then be constructed using mesh terms/ thesaurus within these databases. This search will focus on materials that describe GTIT as an intervention, its operational context and the existing evidence supporting its efficacy. Second, we will search in German and Swiss national and regional library databases to find studies published in German. This exploration is important because the intervention is developed and practiced mainly in Germany and Switzerland. The searches will be conducted by the authors of this protocol in cooperation with an experienced research librarian. Furthermore, titles, abstracts and full-text articles will be screened independently by two reviewers to determine if they meet the inclusion criteria. In case of disagreement, a third and fourth reviewer are consulted.

Inclusion criteria: Data will include studies reflecting quantitative, qualitative and mixed-methods findings related to GTIT, Affolter Modell®, for adults ≥ 18 years with impairments after ABI. We expect finding few or no randomized controlled studies related to GTIT for persons with severe impairments following ABI. Thus, this review will encompass studies reflecting qualitative and grey literature and research across all levels of ABI. The review will consider studies conducted in all settings (e.g. rehabilitation centers, long-term care institutions, municipalities, primary care settings or other care facilities). Thus, this review is not limited to a particular country or healthcare system. Studies published in English, Danish, Swedish, German and Norwegian will be included. Studies are not limited by publication year.

Data extraction process and critical appraisal: Following the search, all identified citations on the topic will be collected and uploaded into Zotero and duplicates will be removed. Any potentially relevant sources will be retrieved in full and their citation details will be imported into Covidence [21] for systematic review management. Each step of the review process will be conducted independently by two reviewers. In case of disagreement, consensus is established by discussion between the two reviewers. Alternatively, a third and fourth reviewer are consulted. Firstly, titles and abstracts will be assessed to determine if the studies comply with the inclusion criteria. Secondly, the full text of selected papers will be assessed in detail against the inclusion criteria. Reasons for exclusion of full text sources offering evidence that does not meet the inclusion criteria will be recorded and reported in the scoping review. Included studies will be evaluated using a design-specific quality assessment template, i.e. the appropriate CASP checklist. Furthermore, a data extraction

Table 1. Progress of the scoping review.

2023	
September - December	Data extraction
	Data evaluation
2024	
January - June	Data analysis
	Write and publish review

template developed and pilot tested by the reviewers will contribute to ensuring systematic data collection and analysis. The results of the search and the study inclusion and exclusion process will be reported in full and reasons will be stated for exclusion at each stage in the final scoping review and presented in a PRISMA-ScR flow diagram [19].

Data analysis and presentation: Using Covidence [21] data extraction will involve all authors using a draft data extraction tool. The following data will be independently extracted from the articles: citations (authors, title, publication year and journal), country (of origin), sample size, study design, population, study aim and extracted relevant data. Data analysis will be conducted at physical meetings between all authors. The extracted data will be presented in a diagrammatic or tabular form in a manner that aligns with the objective of this scoping review. A summary will accompany the tabulated and/or charted results, describing how the results relate to the review's question.

Ethical considerations and declarations: This study will not include participants and will be conducted in accordance with the Helsinki II Declaration and the ethical guidelines for nursing research in the Nordic countries.

Study status and timeline: (Table 1).

Discussion

Expected outcomes: To our knowledge, this study is the first scoping review of research on GTIT ad modum the Affolter Modell®. GTIT is already being used in highly specialized rehabilitation units in various countries, e.g. Denmark, Germany and Switzerland. The theoretical framework on GTIT is well described but currently lacks documentation supported by research. Thus, this scoping review stands as a valuable contribution. It aims to consolidate existing knowledge for health professionals already using GTIT in their daily practice and for health professionals who teach courses on GTIT in neurorehabilitation settings. Furthermore, we expect that this scoping review will serve as an initial phase for an expected larger study, where we will explore GTIT in practice and assess its effects. Given the anticipated scarcity of studies on GTIT, we will use the outcomes of this scoping review to identify documentation on key phenomena within GTIT documented in other settings and models. This will aid in constructing a knowledge-based theoretical framework for GTIT that can supplement existing comprehensive yet non-research-based knowledge of the intervention. One of the strengths of this scoping review is that it includes interdisciplinary databases indexing both biomedical sciences and social psychological sciences. Moreover, we include grey literature to supplement the studies found in bibliographic databases. Furthermore, we target a broad range of studies, being able to include publication in English, German and Danish. This approach covers the languages in countries where GTIT is primarily used.

Review limitations: According to the guidelines of a scoping review, we do not include studies according to their quality. However, in the review, we will discuss the quality of the studies, using CASP guideline, and thereby highlight and discuss the results of the included studies.

Conclusion

A preliminary search suggests an abundance of GTIT theories but a scarcity of research studies specifically on GTIT. This scoping review will raise awareness of the foundational knowledge underpinning GTIT. Simultaneously, it will mark the first step in a larger study exploring the practice and evidence on GTIT

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