

CONTOUR CUTTING WITH SCISSORS – A STUDY ON MANUAL DEXTERITY AND TIME MANAGEMENT

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Abstract: *The article presents a study on the relationship between manual dexterity and time management, considering contour cutting with scissors as an indicator of manual dexterity. A sample of students completed a questionnaire measuring time management skills and performed several tasks designed to evaluate manual dexterity. After data analysis, we obtained a significant positive correlation between manual dexterity and time management. This result may be an argument for an individualized occupational therapy program. There were also significant differences between correct contour cutting with scissors and non-correct contour cutting with scissors in terms of manual dexterity and time management. Starting from the obtained results, we conclude that the contour cutting technique with scissors can be a practical solution for developing manual dexterity and optimizing time management.*

Key words: *occupational therapy, contour cutting with scissors, manual dexterity, time management.*

1. Introduction

Time management as a resource to optimize daily performance is a current problem, especially for young people. They seem overwhelmed by the multitude of tasks they have to perform daily, starting from those of personal autonomy to those of individual study.

Improving the quality of life by optimizing time management is a constant concern of ours (Indreica et al., 2011; Indreica, 2014; Indreica & Cazan, 2016; Indreica, 2019; Indreica & Nicolau, 2020; Indreica et al., 2022). We are especially concerned with finding practical ways that are easy to implement.

Manual dexterity is an ensemble of fine and gross motor movements of the fingers, palms and wrists, movements that are perfectly synchronized and skillfully executed. Studies referring to manual dexterity cover different areas of expertise. The development of manual dexterity is the subject most widely studied in terms of the

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specific skills of dentists (Imam, 2019; Sartorio et al., 2020; Sim et al., 2023), surgeons (Constansia et al., 2022; Lemos et al., 2017; Kunjir et al., 2022) or vocational schools (Polat et al., 2023; Yao et al., 2020). An area, again of great interest, is the remediation or recovery of motor functions in the context of some diseases (Dubbioso et al., 2022) covering all age stages from children (Nishi et al., 2022; Gu & Kong, 2021) until the elderly (Seol et al., 2023; Elboim-Gabyzon & Danial-Saad, 2021; Chen et al., 2022; Menevşe et al., 2023).

As far as we are concerned, our focus is rather on the use of manual dexterity in personal autonomy, in everyday activities, from the perspective of improving the quality of life at any age.

Manual dexterity is the set of skills that people use when performing complex actions using their hands dominantly (handwriting, painting, crocheting, grasping small objects, drawing, etc.) (Lemos et al., 2017). In personal autonomy, manual dexterity is used in household activities (cooking food, serving meals, washing dishes, cleaning, maintaining living space, washing clothes, etc.), personal hygiene (teeth care, body hygiene, hand washing, etc.), personal care (dressing, undressing, arranging hair, etc.), organization of personal space (packing-unpacking clothes, arranging the bed, order in the closet, order on the desk, etc.), responsibility for one's own belongings (Papalia et al., 2011).

Even if manual dexterity develops from childhood, without being practiced in daily activities, it atrophies. Also, motor skills decrease significantly throughout the life course due to aging (Seidler et al., 2010).

Time management, in the most general way, means planning and carrying out in an efficient manner all the necessary activities to be carried out during a day (Feraz et al., 2023; Schunk & Usher, 2013) - in the case of students, taking into account both the activities of personal autonomy, attending classes, individual study, and socializing.

The absence of studies regarding the link between manual dexterity and time management makes it necessary to address this topic. Concerns in the field of occupational therapy have drawn our attention to a possible link between these two variables. This study is part of a didactic demonstration. During the course, students learn different techniques (pyrogravure, stitching, quilling, glass painting, contour cutting with scissors, modeling 3D objects from clay or plasticine, etc.) to identify the movements performed in practical applications and the musculature associated with each movement. The course and labs also include applications that simulate problems you might encounter in real-world contexts.

2. Research Methodology

The objective of the research was to identify a link between manual dexterity and time management, and also if there are differences concerning manual dexterity and time management between those who cut correctly and those who cut incorrectly on the contour with scissors.

2.1. Hypotheses

H1: There is a positive association between manual dexterity and time management.

H2: There are significant differences concerning manual dexterity and time management between those who cut correctly on the contour with scissors and those who cut incorrectly on the contour with scissors.

2.2. Materials and methods

To test the hypothesis, we used a time management questionnaire - TMQ (Indreica & Nicolau, 2020), a practice test for measuring manual dexterity in individual autonomy activities and a practice test for contour cutting with scissors.

The time management questionnaire (Indreica & Nicolau, 2020) contains 24 items. The 24 items are focused on three dimensions of the time management variable: activity planning (AP), activity monitoring (AM), and activity efficiency (AE). Each dimension was measured using indicators (minimum 3 and maximum 4 for each dimension), and each indicator was represented in the questionnaire by one or more items. For activity planning, the indicators are: making a program (5 and 19), prioritizing activities (1, 2, 4 and 9), time distribution (6 and 12) and clearly defined objectives (10 and 11). For activity monitoring, the indicators are: using a schedule (20), respecting the time allocated to each activity (7, 8, 15 and 23) and redistributing time (13 and 16). For activity efficiency indicators: carrying out activities (3, 21 and 22), requesting support (14 and 24) and using free time slots (17 and 18). Responses are presented on a Likert scale from 1 (very rarely) to 5 (very often). For AP, AM and AE, the indicator scores are summed. Cronbach's Alpha coefficient is .87, which means that the test has good internal consistency.

The practical test for measuring manual dexterity in personal autonomy activities consisted of putting on five items of clothing (shirt with 12 small buttons, raincoat with 8 large buttons, jacket with zipper, gloves with fingers and wrist tightening system, shoes with laces), preparing a sandwich (buttering two slices of bread, cutting two slices of cheese, wrapping in a napkin) and packing five items of clothing (three T-shirts, a sweatshirt, a pair of pants). We will briefly name the three indicators used: putting on clothes, preparing a sandwich and packing clothes. The activities are performed one after the other, but the completion time is recorded separately for each one. The shortest time interval indicates the highest level of dexterity (60 – 120 seconds = 5 very fast; 121 – 240 seconds = 4 fast; 241 – 360 seconds = 3 environment; 361 – 480 seconds = 2 slow; over 481 seconds = 1 very slow). Scaling was used because it is not possible to operate with measured time - a small time indicates a high level of manual dexterity, respectively a large time indicates a low level of manual dexterity.

The practical outline cutting activity with scissors consisted of cutting out a simple flower shape with five curved petals, measuring 10 cm. It is considered correctly cut if there is no deviation from the contour and the trajectory of the cut is continuous. It is assigned "correct" or "incorrect".

2.3. Participants and procedure

The sample consisted of $N = 116$, of whom 92 were female and 24 were male. The minimum age value being 21 years and the maximum 39 years ($M = 21.3$ years, $SD = 0.35$), 107 right-handed and 9 left-handed participants, none with musculoskeletal disorders. The participants in this study were students from the Occupational Therapy course from the previous academic year (Balneophysiotherapies, Special Psychopedagogy, Physiotherapy and Special Motricity study programs). Being a practical didactic application within the laboratories, only the results of those who expressed their agreement were processed. Laboratory applications were done individually with self-time recording using a stopwatch. All participants started the trials simultaneously but completed them at their own pace.

3. Results

From the analysis of the data obtained from the tested group, it shows that all three dimensions of the time management variable correlate strongly significantly with the dimensions of the manual dexterity variables as can be seen in Table 1. We especially emphasize the correlation between activity efficiency and putting on clothes ($r = .841$, $p < .01$), preparing a sandwich ($r = .638$, $p < .01$) and packing clothes ($r = .722$, $p < .01$).

The three dimensions of the time management variable - activity planning (indicators making a schedule, prioritizing activities, time distribution, clearly defined goals), activity monitoring (using a schedule, observing the time allotted to each activity, redistributing time) and activity efficiency (achieving the activities, asking for support, making use of free slots of time) - increase with manual dexterity. Following these results, H1 is sustained.

Table 1

Pearson correlation coefficients between dimensions of manual dexterity and time management

Variables	1	2	3	4	5	6
1. Activity planning	-	.472**	.325**	.647**	.565**	.493**
2. Activity monitoring		-	.442**	.549**	.617**	.836**
3. Activity efficiency			-	.841**	.638**	.722**
4. Putting on clothes				-	.370**	.463**
5. Preparing a sandwich					-	.814**
6. Packing clothes						-

Note: $N = 116$, * $p < .05$, ** $p < .01$.

The t-test results indicate statistically significant differences in time management and manual dexterity between correct contour cutters and incorrect contour cutters with scissors, as can be seen in Table 2. Obtaining these results confirms H2.

Cutting with scissors is not a complex motor activity. The most common motor movements are flexion-extension of the thumb, index and middle fingers. But contour

cutting with scissors (even if the contour is simple) requires, in addition to these movements, eye-motor coordination, a skill that can only be acquired through systematic exercises. As can be seen in fig. 1, with incorrect cutting the deviation from the contour is major.

Table 2

Results of t-test comparing correct and incorrect contour cutters according to time management and manual dexterity

Variables	Cutting	N	Mean	SD	t	df	p
Time management	correct	52	42.31	.74	24.12	115	.000
	incorrect	64	27.83	.48			
Manual dexterity	correct	52	11.69	.63	17.61	115	.000
	incorrect	64	7.43	.71			



Fig. 1. *Correct and incorrect contour cutters with scissors (examples)*

6. Discussion

The results obtained from this study show that there is an association between time management and manual dexterity, the dimensions of the two variables correlating significantly. A good manual dexterity, involved in our example in personal autonomy, is associated with an increased level in the planning of activities according to clearly defined objectives and priorities and with an optimal use of time.

A significant deterioration of manual dexterity involved in personal autonomy implicitly leads to impaired time management. Manual dexterity is what also ensures speed in carrying out physical activities within personal autonomy. For example, putting on five items of clothing took a maximum of 612 seconds (over 10 minutes) and a minimum of 173 seconds (about 3 minutes). The difference of 7 minutes may seem like a minor one, but if we were to calculate during the whole day the time of carrying out the activities of personal autonomy we would reach major differences of several hours.

When planning activities, their importance is most often taken into account (Feraz et

al., 2023) or the urgency of their implementation (Indreica et al., 2011). One aspect that escapes us when we plan our activities is that related to our skills and competencies. Manual dexterity is part of the abilities and aptitudes area. The efficiency of the time to solve an activity also directly depends on the speed of work. This aspect can also be evident in time management. People who obtained a good score for time management also recorded an increased level of manual dexterity, completed work tasks in a short time interval. Therefore, manual dexterity can be a decisive factor in performing many activities of daily life more quickly.

The relationship between the dimensions of the time management variable and the dimensions of the manual dexterity variable is an aspect that underlines the need for a manual dexterity development program. The technique of cutting with scissors can be transformed into an exercise to develop manual dexterity, being a direct indicator of it. The significant differences between contour cutters with scissors and non-contour cutters with scissors in terms of manual dexterity and time management may make an argument for this.

The main movements of cutting with scissors (flexion-extension of fingers, forceps, semi-circumduction of the wrist, etc.) are the most frequent movements in everyday activities (dressing-undressing, serving meals, hygiene, housekeeping, etc.), and practicing by this technique is similar to the effects of vigorous versus light physical activities.

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