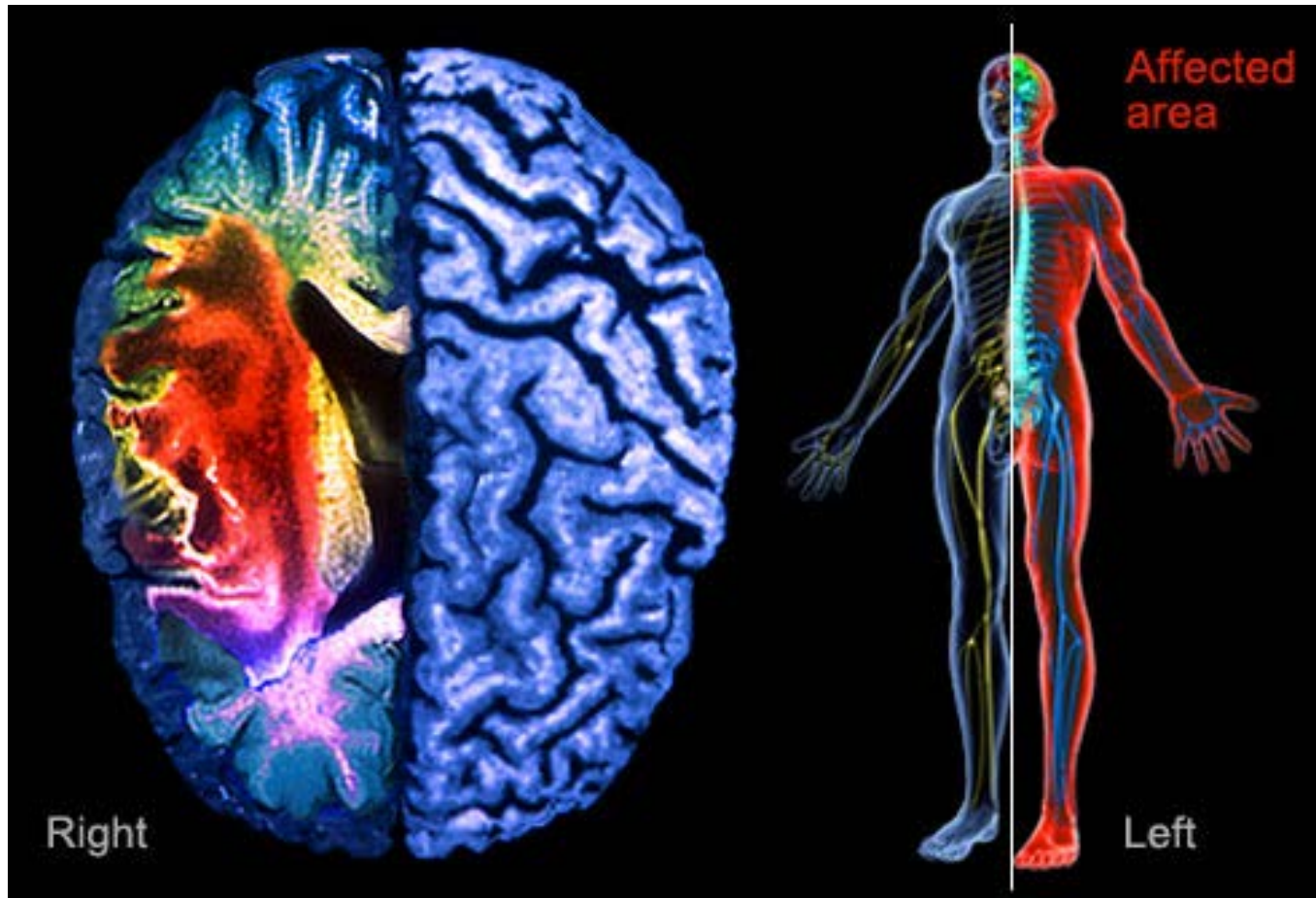


A crumpled blue paper ball is the central focus, resting on a white surface. The background features faint, hand-drawn sketches, including a lightbulb with horizontal lines inside, and several arrows pointing in different directions. The overall aesthetic is clean and professional, with a soft blue and white color palette.

Reabilitacijos principai ankstyvajame etape

**FMR gydytoja Gintarė Vaitkienė
RVUL, VIKO
EMPATIJA neuroklinika**

Insulto poveikis



Biosocialinių funkcijų sutrikimai

STROKE EFFECTS

PHYSICAL

There are many types of vision problems and treatments: survivors can face balance and posture problems, disorientation, trouble focusing or a reduced blink rate.

Paralysis of the throat muscles; can disrupt the swallowing process and make eating, drinking, taking medicine and breathing difficult.

Weakness or paralysis that limits the ability to raise the front part of the foot.



Issues that can develop are sleep-related breathing disorders, changing sleep patterns, as in sleeping more during the day than at night, and insomnia.

Lack of ability to control bladder and/or bowel movements.

Weakness or the inability to move one side of the body.

COGNITIVE



LIFESTYLE



Reabilitacijos tikslai ir uždaviniai



Komplikacijų prevencija

Jau 1 parą

Minimizuoti pažeidimus

Gydymas

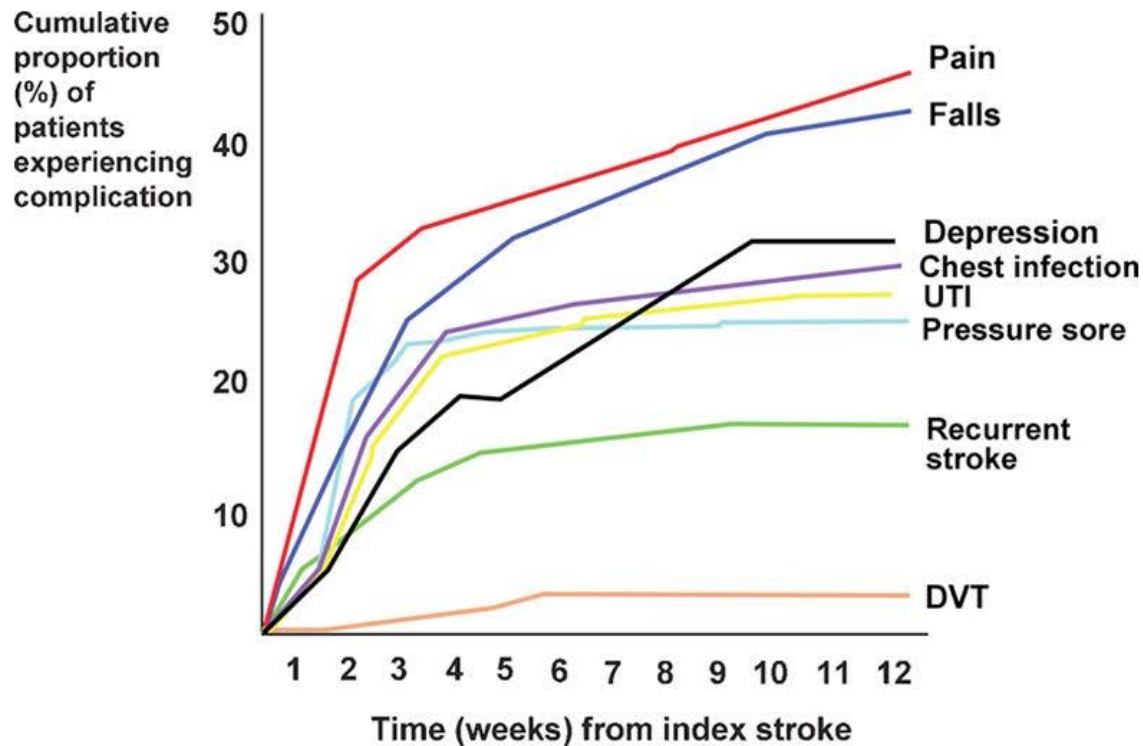
**Funkcijos atstatymas
arba kompensavimas**

Reabilitacija

Ankstyvos komplikacijos



Stroke complications



Semin Neurol. 2010



Table 3 Frequency of and trend for the most common complications in the 2003 and 2013 cohort

From: [Complications in the first week after stroke: a 10-year comparison](#)

Stroke severity	n	2003						n	2013					
		Fever	Chest infection	Prog. stroke	MI	UTI	Falls		Fever	Chest infection	Prog. stroke	MI	UTI	Falls
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Very severe	61	34 (55.7)	29 (47.5)	18 (29.5)	8 (13.1)	12 (19.7)	2 (3.3)	26	18 (69.2)	11 (42.3)	0	1 (3.8)	5 (19.2)	3 (11.5)
Severe	58	32 (55.2)	14 (24.1)	12 (20.7)	8 (13.8)	9 (15.5)	4 (6.9)	24	11 (45.8)	6 (25.0)	3 (12.5)	0	4 (16.7)	5 (20.8)
Moderate	111	23 (20.7)	4 (3.6)	41 (36.9)	4 (3.6)	31 (27.9)	20 (18.0)	58	10 (17.2)	1 (1.7)	1 (1.7)	0	8 (13.8)	10 (17.2)
Mild	124	19 (15.3)	7 (5.6)	13 (10.5)	1 (0.8)	20 (16.1)	10 (8.1)	49	5 (10.2)	0	3 (6.1)	0	5 (10.2)	3 (6.1)
Very mild	135	8 (5.9)	1 (0.7)	6 (4.4)	1 (0.7)	6 (4.4)	4 (3.0)	28	2 (7.1)	0	2 (7.1)	0	0	1 (3.6)
Total number	489	116 (23.7)	55 (11.2)	90 (18.4)	22 (4.5)	78 (16.0)	40 (8.2)	185	46 (24.9)	18 (9.7)	9 (4.9)	1 (0.5)	22 (11.9)	22 (11.9)
p-value for trend ^a		<0.001	<0.001	<0.001	<0.001	0.001	0.34		<0.001	<0.001	0.46	0.070	0.025	0.091

Complications in the first week after stroke: a 10-year comparison

Martina Reiten Bovim, Torunn Askim, Stian Lydersen, Hild Fjærtøft & Bent Indredavik

BMC Neurology volume 16, Article number: 133 (2016) |

Kam reikia ankstyvos reabilitacijos?



**10 proc. patyrusių galvos smegenų insultą ir išgyvenusią ligonių visiškai pasveiksta,
25 proc. išlieka minimalių liekamųjų reiškinių,
40 proc. - nustatoma vidutinio sunkumo funkcijų sutrikimų,
15 – 30 proc. - nustatomas sunkus neįgalumas**

Ankstyvos reabilitacijos svarbą GSI sergantiems pacientams, turi didelę įtaką tolimesnei ligos eigai, sąlygoja geresnę gyvenimo pilnatvę ateityje

Krančiukaitė D, Rastenytė D, Jurėnienė K, Šapogienė D. Persirgusių galvos smegenų insultu gyvenimo kokybė. Medicina, Kaunas, 2007

Ankstyva reabilitacija



Insulto reabilitacija pradedama,
kai PACIENTO būklė stabilizuojasi : 24 – 48 val po insulto

Ankstyva individualizuota
terapija padeda pagerinti
pasveikimo galimybę



SITTING



BALANCE



WALKING



GETTING
IN/OUT OF BED,
OR CHAIRS



SWALLOWING



PROPER DIET



SPEECH

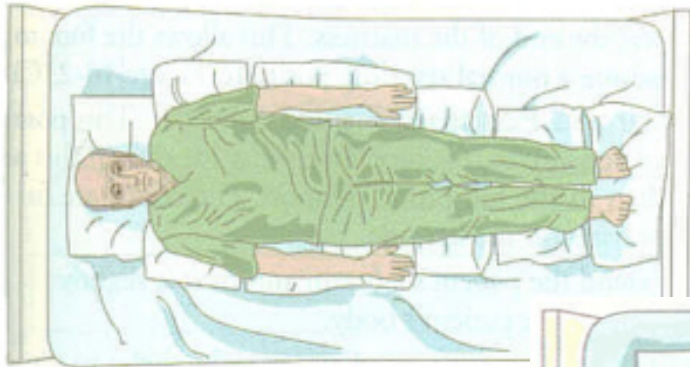


MEMORY



DRESSING,
BATHING AND
DAILY LIFE

Komplikacijų prevencija



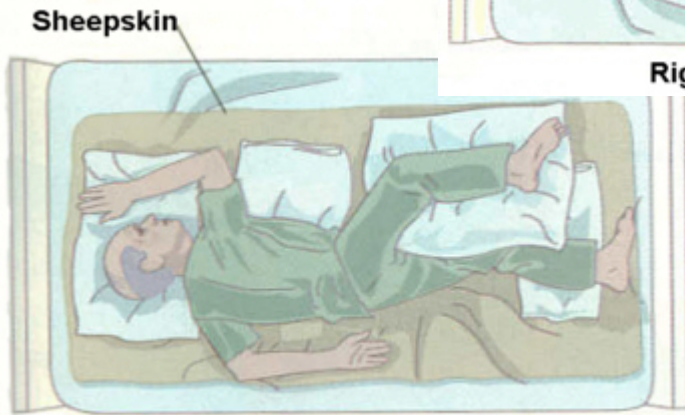
SUPINE POSITION



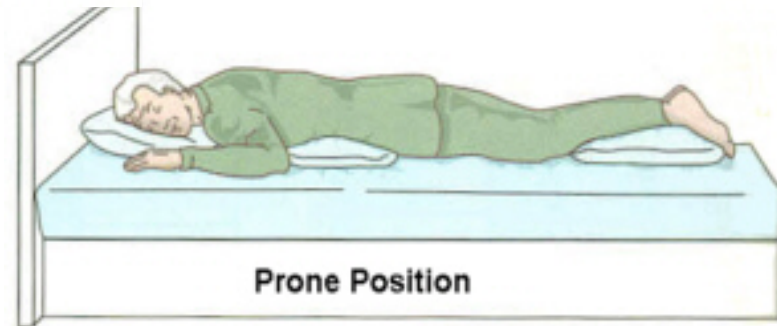
misupine position is a variation of supine..



Right lateral position.

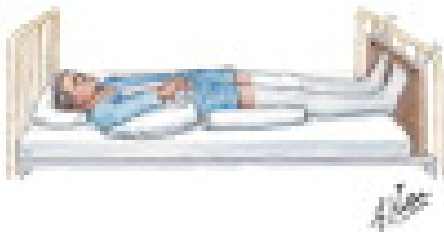


Semiprone position is a variation of prone.



Prone Position

Pozicionavimo priemonės



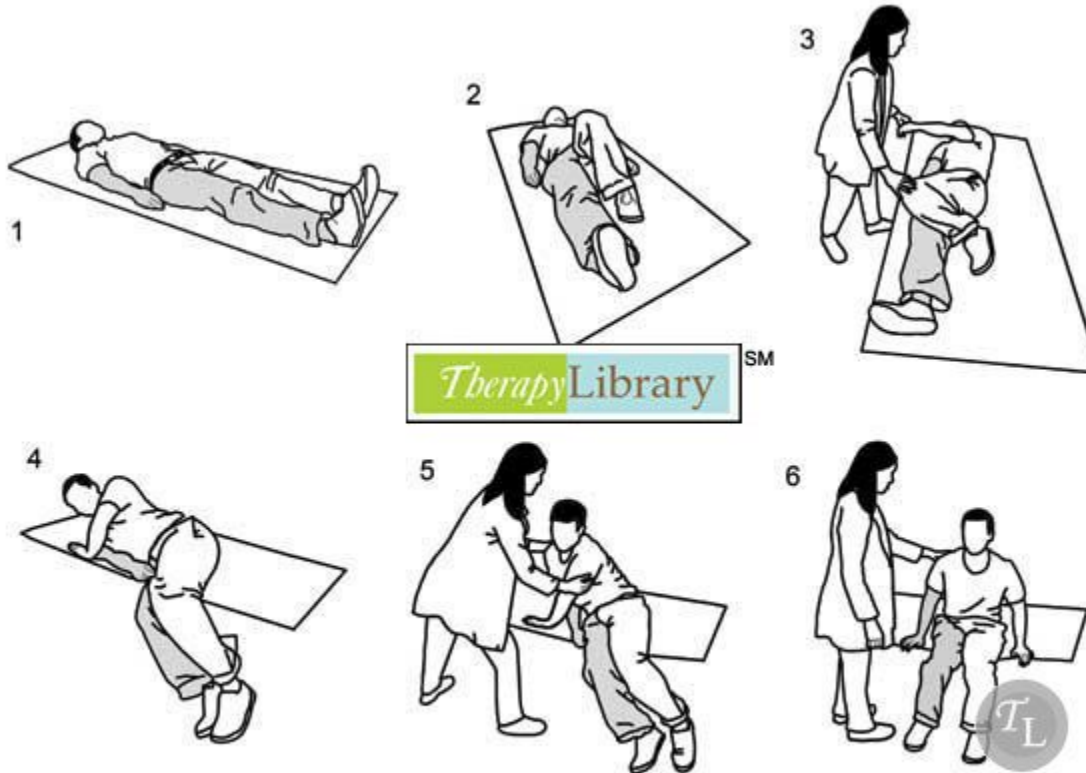
Ankstyvas ligonio aktyvinimas

Tikslas:

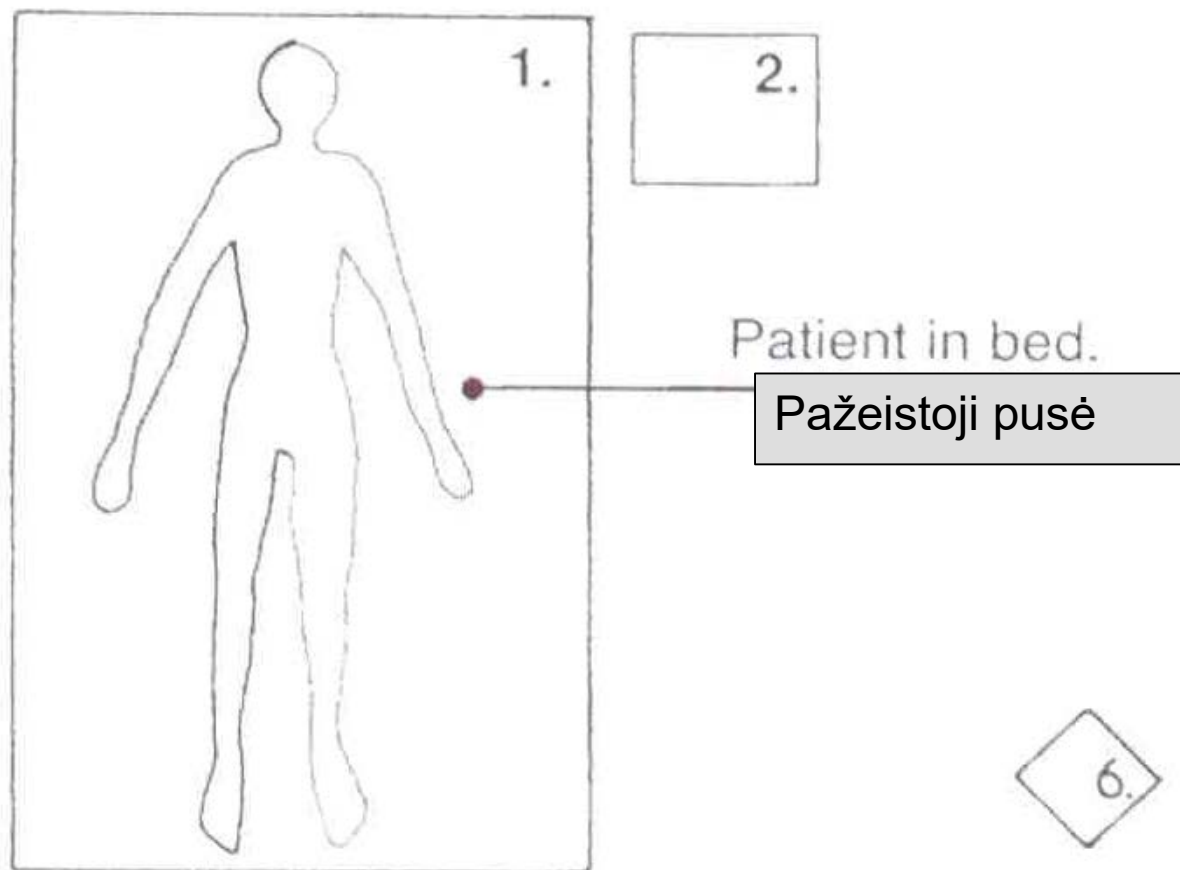
Aktyvumas – 6 val per parą



Ankstyvas sodinimas



Padētis erdvēje



Kaip saugiai greitai ir lengvai perkelti pacientą?



GALVOS SMEGENŲ INSULTO DIAGNOSTIKOS, GYDYMO, PROFILAKTIKOS IR REABILITACIJOS METODINĖS REKOMENDACIJOS

http://www.neuroseminarai.lt/wp-content/uploads/2017/02/Neuro_2012_Nr2_163-195.pdf

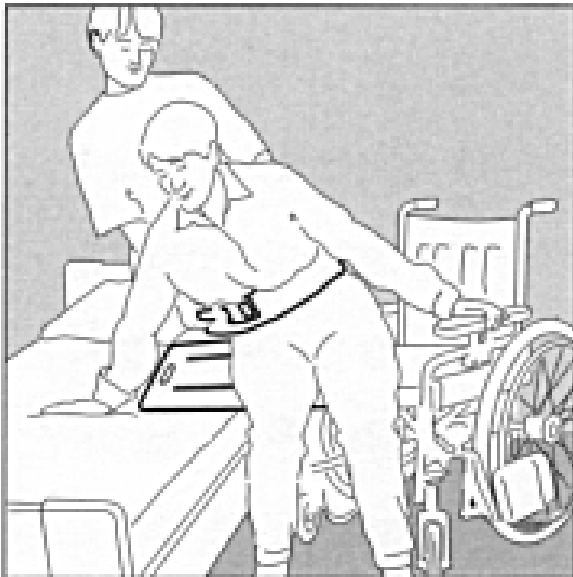
5.2.1. Ankstyvas ligonio aktyvinimas :

5.2.1.1. pacientas sodinamas lovoje iškart, kai tik būklė stabilizuojasi (1–2 parą, po ICK – kai leidžia būklė): pirmą kartą – 45 laipsnių kampu, jei nėra ortostatinių reakcijų, sodinimo kampas didinamas iki 90 laipsnių. Gerai toleruojant sėdimą padėtį lovoje, pacientas pradedamas sodinti nuleistomi kojomis. Jis valgo, prausiasi sėdimoje padėtyje;

5.2.1.2. pacientas statomas iškart, kai tik pradeda gerai toleruoti sėdimą padėtį;

Lietuvos insultų asociacija

Ankstyvas tinkamas mobilumo priemonių pritaikymas



6. A light and partially active patient also wearing a SST Belt



7. A weak and heavy patient may require the use of two SafetySure products: a SST Board and a SST Belt

Vaikščiojimo priemonės

tpnc.lt



**Savarankiškumas
ir gyvenimo kokybė
kiekvienam**

LIETUVIŲ

ENGLISH

РУССКИЙ



**TECHNINĖS PAGALBOS
NEĮGALIESIEMS CENTRAS**
PRIE SOCIALINĖS APSAUGOS
IR DARBO MINISTERIJOS



REGISTRACIJA



[GYVENTOJAMS](#)

[SPECIALISTAMS](#)

[TECHNINĖS PAGALBOS PRIEMONĖS](#)

[APIE TPNC](#)

**Konsultacijos
teikiamos
Tel. 19989**

F

G

H

I

Kritimų rizika



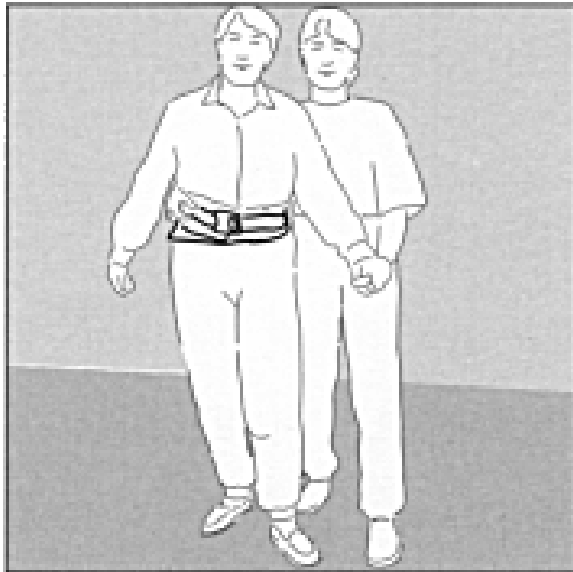
Prevenција

Tips to PREVENT A FALL

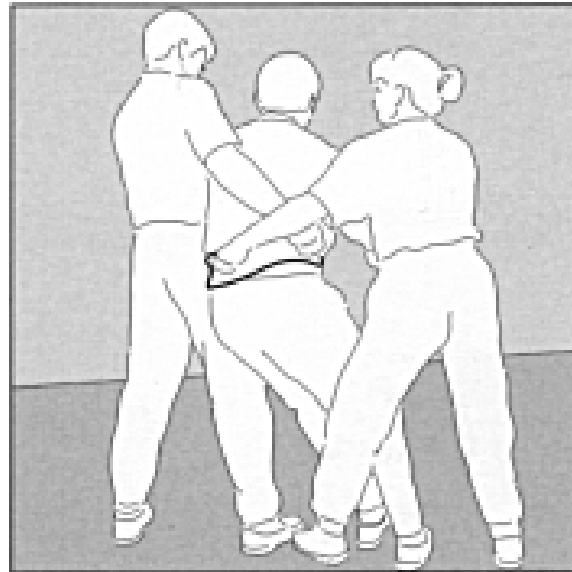
- Ask for **HELP**
- Always wear proper **FOOTWEAR**
- Wear your **GLASSES**
- Use your **MOBILITY AID**
- Watch for spills and **HAZARDS**



4 / 3 2 1



12. An active patient requiring support



13. A large, heavy patient collapsing

Aktyvūs/pasyvūs judesiai paveda išsaugoti sąnarių amplitudę



Paprastos priemonės ir užduotys padeda išlaikyti raumenų jėgą



Sveikos rankos išjungimas – skatinti funkcinis judesius atlikti pažeista ranka

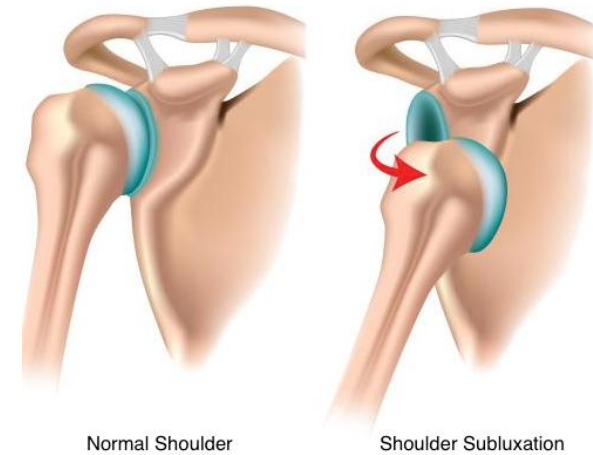


Peties skausmas iki 80 proc. pacientų

Skausmas gali atsirasti, jei silpnas petys po insulto tampa subluksuotas (iš dalies išniręs).

Kai petys silpnas, jis tampa ypač nestabilus.

Daugeliu atvejų tokio tipo sužalojimo galima išvengti apsaugant peties sąnarį ir mokant slaugos specialistus kaip padėti pacientui, netraukiant už rankos.



Kapsulitas dėl nejudrumo

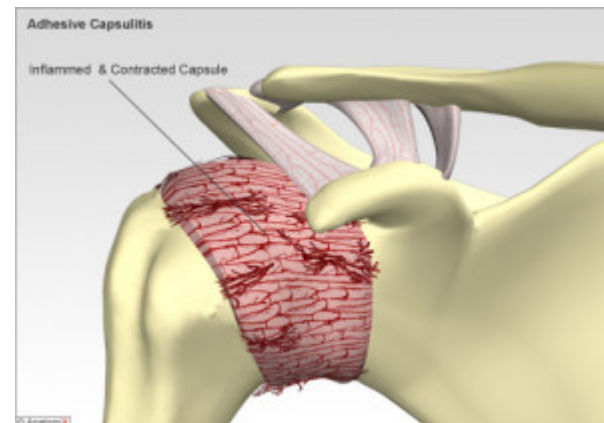
Komplikacija, kuri gali atsirasti petyje po insulto, yra kapsulitas.

Jei ranka laikoma vienoje padėtyje, aplink sąnarį esančios struktūros „užšąla“.

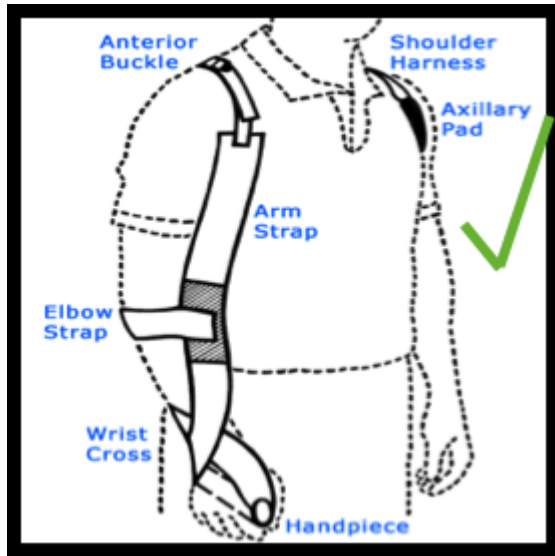
Kapsulė aplink peties sąnarį sutrumpėja ir neleidžia sąnariui judėti.

Jei taip atsitinka, pacientas patiria skausmą judesių metu.

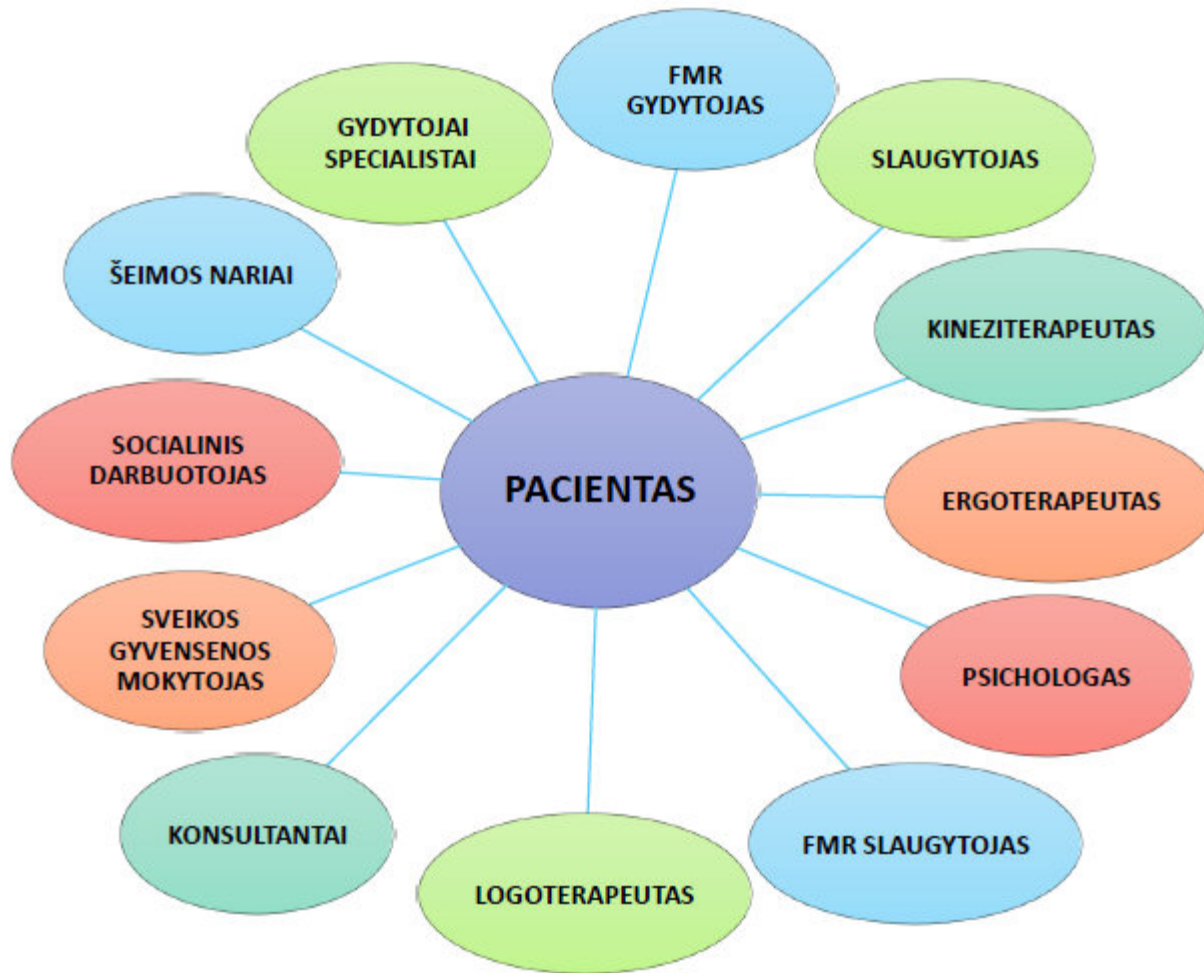
Kompleksinis regioninis skausmo sindromas - būklė, atsirandanti, kai padidėja nervinis jautrumas dėl rankos „nenaudojimo“.



Peties skausmo prevencija



Insultų reabilitacijos komanda



Iššūkiai insultų reabilitacijoje



1. Funkcinės būklės objektyvizavimas
2. Reabilitacijos efektyvumas
3. Neįgalumo mažinimas
4. Aktyvaus gydymo ir Reabilitacijos laiko Trumpinimas
5. Paciento motyvavimas
6. Prisitaikymas prie kintančios modernios aplinkos

Naujos reabilitacijos technologijos



Naujos reabilitacijos technologijos

1. Virtuali realybė
2. Telerabilitacija
3. Robotinės sistemos
4. Specifinių sutrikimų lavinimo sistemos
5. Funkcinė Elektrostimuliacija + MMG
6. Techninės pagalbos priemonės



CLINICAL EVALUATION OF THE EFFECTIVENESS OF NEUROFORMA - A VIRTUAL REALITY REHABILITATION TOOL

M. Rakowicz¹, M. Kruszyński², A. Sobańska¹, J. Bemberek¹, B. Lech³, K. Ziara-Jakutowicz¹, I. Stępniaik⁴, H. Sienkiewicz-Jaros⁵, G. Witkowski¹, D. Lis⁶, K. Kurowska¹, W. Wicha¹, M. Skroczyński⁷, M. Polak⁸, A. Chabuda⁹, L. Czerwos⁷, M. Pawlisz⁷, M. Kruszyński¹

¹Institute of Psychiatry and Neurology, Warsaw
²Titanis Sp. z o.o., Warsaw
³Polish Association of Families with Spinocerebellar Ataxia, Warsaw
⁴Polish Huntington's Disease Association, Warsaw
⁵Polish Multiple Sclerosis Society, Warsaw
⁶Faculty of Physics, University of Warsaw, Warsaw
⁷Mossakowski Medical Research Centre, Polish Academy of Sciences, Warsaw

...especially those with genetic basis, gradually reduce motor and cognitive abilities of patients, leading to inability to work and to social exclusion. Access to computer games provides possibilities for new virtual reality tools in rehabilitation. Neuroforma is a computer program offering motor and cognitive exercises, which supports and supplements the rehabilitation process and facilitates remote care of a therapist. It is based on the motion capture technology, is compatible with a conventional webcam, and includes 21 interactive exercises.

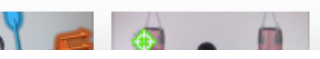
...was to evaluate the effectiveness of the Neuroforma system of patients with neurodegenerative diseases: multiple cerebellar ataxia (SCA), and Huntington's disease (HD).

In the project were assigned to several training control groups (N=2/11 with SCA and 25/11 with HD). All participants underwent prior to the final inclusion and after 6 weeks. The following Expanded Disability Status Scale (EDSS), HD - Unified Huntington's Disease Rating Scale (UHDRS), SCA - Scale for the Assessment and Rating of Ataxia (SARA) were assessed using the 8 Metro Walk Test and the 9 Stroop Color-Word Test. Beck Depression Inventory (BDI), Frontal Assessment Battery (FAB), and EQ-SD scale were used for self-assessment symptoms, quality of life, and disability status.

Control group N=10	Training group N=27	Control group N=11	Training group N=25	Control group N=26	Training group N=27
4.8, 1.4	8.8, 19.9	3.8, 10.8	7.8, 19.9	2.8, 9.9	12.8, 15.9
53.2±2.2	52.6±7.4	63.3±6.5	67.1±17.7	51.4±11.0	61.2±13.3
101-101	125-101	128-101	101-178	127-101	127-101
26.1±1.4	26.6±8.0	29.7±6.4	31.6±15.1	28.1±11.1	24.3±12.1
178-111	178-118	127-111	128-148	127-118	127-111
98.1±1.8	173±10.0	104±6.6	104±14.7	124±7.7	102±5.4
31-20	27-21	11-11	11-11	11-11	11-11
5.6±1.3	5.7±1.7	21.1±6.8	18.1±10.9	14.8±4.3	15.4±6.8
11-7	11-7	11-7	11-7	11-7	11-7
10.6±2.2	17.8±6.1	21±4.1	20.7±5.5	18.1±4.1	18.1±4.7
127-27	128-27	127-27	127-27	127-27	127-27
22.6±2.2	26.6±8.8	22.6±2.7	22.6±4.7	24.2±3.6	24.1±4.1
18.5±2.0	18.5±2.1	17.5±2.4	18.6±3.6	17.8±2.1	17.8±2.1

...Scales: UHDRS - Unified Huntington Disease Rating Scale; SARA - Scale for the Assessment and Rating of Ataxia

...computer program developed by Titanis. It is based on the motion capture technology. Body movements are captured by a 3D or 2D camera. Patient's movements on the computer screen along with virtual objects interact with the virtual objects guide the patient and precise modelling of correct movement patterns.



Results - adherence and achievements in the program

Adherence was high in all three training groups. The average percentage of days of performing an exercise session was 85% in the MS group, 87% - HD, and 90% - SCA. Achievements in the program varied between groups. In motor exercises the highest difficulty level was reached by 71% of patients with MS, 30% of patients with HD, and 50% of patients with SCA. In cognitive exercises, the results were 68% for MS, 26% for HD, and 51% for SCA.

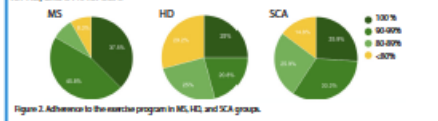
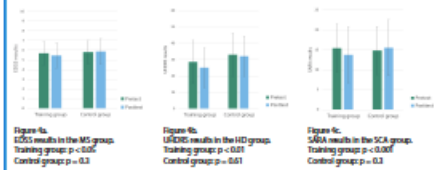


Figure 3a-b-c. Patient's results in three selected exercises. Patient's education: age - 55; diagnosis - primary progressive MS; age of first appearance of clinical symptoms - 32; education - university degree employment - unemployed; EDSS - 5.5 in pre-test vs. 2.5 in post-test; BDI - 21 vs. 4; Stroop interference test - 24 vs. 26.

Clinical assessment results



There was a statistically significant decrease in ataxia and alternating movements problems in SCA, p<0.0003, and in chorea in HD, p<0.01. Improvement of cognitive functions in the Stroop interference test was noted in all three training groups. Patients with MS also showed improvement in verbal fluency tests. Furthermore, there was a statistically significant decrease in depression symptoms in exercising patients with MS and SCA, p<0.03. There were no statistically significant changes in the control groups, except for a decrease in depression symptoms in the HD control group.

Conclusions

Clinical assessment showed a significant improvement in motor and cognitive functions...

Reality Technologies of the Paretic Upper after Ischemic Stroke

...non-oesophageal of the central nervous system affected higher number of instances of physiotherapy, and therefore requires rehabilitation of patients after stroke. Used in the process of restoration of motor stroke, which has been confirmed...

...impact of defining the impact of virtual or performance of the paretic upper limbs after ischemic stroke.

...computer program "Neuroforma" from Cybertherapy in a virtual environment. Function Test (WMFT) and Ashworth hemiparesis stroke, who remained in the...

...re was noticed improvement in the upper paresis in the speed of performing...

...Upper limb

September 10, 2015; Published:

...of the central disability. Current that the number of episodes of higher number of of daily living (ADL) [1]. C patients after stroke is to efficiency of the paretic u...

...Physiotherapy in v... The passage of time and technology become ever... This form of progress has as physiotherapy in v... computer-generated, int...

...This article is available in: www.jnsour.com

Impact of Motivational Enhancers on Computer Aided Neurorehabilitation in Multiple Sclerosis

Emilia Cheladze¹, Mateusz Kruszyński², Marek Kruszyński³, Łukasz Polak²
Tutor: dr Joanna Dreszer-Drogoń⁴
¹Nicolaus Copernicus University in Toruń, ²University of Warsaw, ³Adam Mickiewicz University

INTRODUCTION

The importance and effectiveness of physiotherapy in Multiple Sclerosis (MS) treatment is unquestionable. There is a growing trend to focus on neurological rehabilitation to improve patients' cognitive functioning. As technology develops, new computer programs dedicated for neurorehabilitation emerge. Parallel there is huge emergence of persuasive technology (PT) tools.

The study's goal was to use one of existing computer-based rehabilitation tools, enhance its procedure with different types of reminders about exercises and to determine which type of reminder would be the most effective one.

METHODS

Eleven subjects were included into the study. Their task was to perform one training session with program every day for three weeks. Exercise frequency was monitored, depression level was controlled (BDI), also subject opinion on the program was collected after the end of the study.



Figure 1. Neuroforma - computer program supporting home rehabilitation using virtual reality for improving mobility and cognitive functioning.

Group	Type of enhancer	Number of subjects
A	SMG	4
B	built-in reminder	4
C	-	3

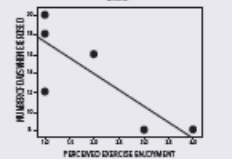
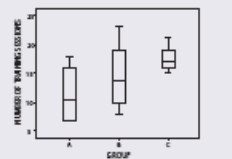
Figure 2. Two types of enhancers were chosen: Short Text Message and reminder built into the program. Those two were compared with control group, which did not get any reminders.

RESULTS

Observed tendency in patients' behaviour was meaning no training sessions frequency subjects receiving enhancement. Moreover a tendency emerged, that the high obtained in control group.

BDI gave an average result 11.36 (between differences within groups), however the number of training sessions. Only in group C BDI correlated positively with sessions.

Subjects' answers on whether trainings enjoyable or having good influence on health number of training sessions only with 'enjoy'



CONCLUSIONS

Persuasion via text message seemed to be the best for that can be seen in Gasser's (2003) the zone, which could have been irritating and p... This result can be also connected with lack of PT (Ijsselstein et al., 2006) - the enhancer when subject was not able to perform responsibility could have been pushed on to increase of self-control.

It's also possible that used enhancement scheme Gollwitzer's (1999) 'implementation intention when and what kind of reminder to receive)

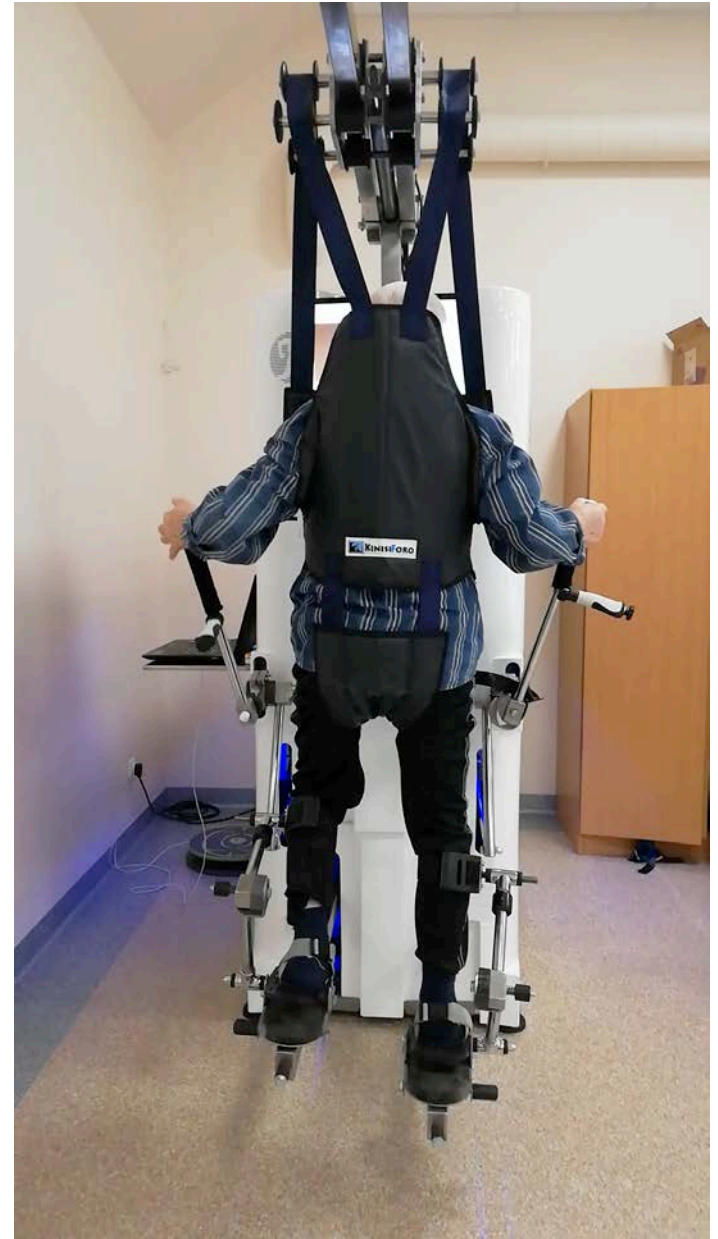
Variable Interval Reinforcement schema derived from behaviourism and used nowadays in Applied Behaviour Analysis (ABA) was used as a schema for this Persuasive Technology design. Reminders were delivered 8 times during three week training period. Remainder contained information about amount of performed and left training sessions and encouragement to do exercises.

M	T	W	T	F	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	

Figure 3. Enhancement schema. M - meeting with subject; S - beginning of three weeks of training (from 7th till 28th day); E - end of training;

Robotinės sistemos

- Pagerėja judesio ir žingsnio koordinacija.
- Didėja raumenų jėga
- Tuo pat metu treniruojamos viršutinės bet apatinės galūnės ir liemens raumenys.
- Didėja ištvermė.
- Pagerėja deguonies įsisavinimas.
- Padidėja judesių amplitudė.
- Palaikomas visų sąnarių judrumas ir lankstumas.
- Kompensuojamas dešinės - kairės deficitas.
- Pagerinamas balansas.
- Sumažėja skausmas, kylantis dėl raumenų nejudrumo.
- Sumažėja ataksija.
- Reguluojamas raumenų tonusas.
- Sumažėja raumenų spazmai ir spastiškumas.



Interaktyvi pažintinių funkcijų lavinimo sistema RehaCom



RehaCom programa galima dirbti gimtąja kalba! RehaCom išverstas į 22 kalbas, taip pat lietuvių, rusų, lenkų.

- RehaCom – kompiuterinė kognityvinių funkcijų terapijos sistema, kurios efektyvumas įrodytas klinikiniuose tyrimuose.
- RehaCom susideda iš kognityvinių funkcijų lavinimo, pratimų modulių ir kognityvinių funkcijų testavimo modulio.
- RehaCom terapijos moduliai sukurti taip, kad jais galėtų lengvai naudotis net pacientai, turintys sunkių kognityvinių trūkumų.

Tai labai paprastai valdoma sistema.

- Galima parsisiųsti bandomąją versiją
- Kompensuojama TPNC



Leitlinien für Diagnostik und Therapie in der Neurologie, 2012
Vokietijos neurologijos asociacijos gairės:

RehaCom terapinės sesijos trukmė priklauso nuo paciento būklės.

Pacientui rekomenduojama:

ūmi, ankstyva ligos fazė: RehaCom kelis kartus per dieną po 10 - 15 minučių.

Vėlesnėse ligos ar reabilitacijos fazėse, po 6 - 8 savaičių, sesijos gali trukti 45 - 60 min. - mažiausiai 3 kartus per savaitę.

Vėlyvoje reabilitacijos fazėje rekomenduojamos pratimų sesijos namuose, 2 - 3 kartus per savaitę iki 3 - 5 mėnesių.

Depresija ir socialinė izoliacija



<http://www.tpnc.lt/lt/kortele/pazintiniu-funkciju-testavimo-ir-lavinimo-programa/235>

The screenshot shows a web browser window with the URL www.tpnc.lt/lt/kortele/pazintiniu-funkciju-testavimo-ir-lavinimo-programa/235. The page header includes the TPNC logo, a search bar, and navigation links for registration and social media. The main content area features a photo of a woman with a laptop displaying a brain diagram, and a detailed description of the program in Lithuanian. The browser's taskbar at the bottom shows several open PDF files and a Windows taskbar with system icons and the time 16:15.

TPP priemonių elektroninis katalogas

LIETUVIŲ ENGLISH РУССКИЙ

IEŠKITE PAIEŠKOS TEKSTĄ

REGISTRACIJA

Matuokliai | Pažintinių funkcijų testavimo ir lavinimo programa

Pažintinių funkcijų testavimo ir lavinimo programa Atgal

TPP KODAS: 801230401A
E. KATALOGO TPP KODAS: 17AK001MED
TIEKĖJAS: UAB "MEDLINK"
GAMINTOJAS: HASOMED GMBH
APRŪPINA TPNC: TAIP

Aprašymas

Inovatyvi, sertifikuota kompiuterinė programa skirta pažintinių funkcijų lavinimui. Pažintinių (moksl. kognityvinių) funkcijų sutrikimas - dažnas įvairių ligų simptomas sukkeliantis dėmesingumo, pastabumo, koncentracijos, atminties, planavimo, skaičiavimo, kasdienių užduočių sprendimo sunkumų.

Judesių, pusiausvyros ir pažintinių funkcijų lavinimas



Rankos funkcijos funkciniių judesiių lavinimas



RAPAEI



Evaluation

- Range of motion (ROM)
- Functional movements

Training

- Intensive
- Repetitive
- Task-oriented (ADL-related)

Result

- Game score
- Performance metrics (Play time, the number of motions, speed and accuracy of the movements)

Performance report

- Performance history
- Progress monitoring
- Data sharing via printing or emailing

NEOFECT

Naujos technologijos elektroterapijoje

FES+MMG



P Power Assist Mode [Voluntary movement + Electric stimulation]

Using real-time feedback, electrical stimulation is output in proportion to EMG signal in the body part being treated. The amount of strength exerted can be visually monitored with the muscle action potential indicator lights.



Rijimo funkcijos sutrikimai ir atstatymas

?





European Society for Swallowing Disorders

ESSD Position Statements:

Screening, Diagnosis and Treatment of Oropharyngeal Dysphagia in Stroke Patients

- **Rijimo sutrikimų patikra būtina visiems pacientams patyrusiems insultą.**
- **Plaučių uždegimas yra dažna komplikacija pirmomis dienomis po insulto ir yra susijusi su blogomis baigtimis.**
- **Disfagijos patikros organizavimas pacientams patyrusiems insultą gali sumažinti pneumonijos riziką ir antibiotikų vartojimą.**

Žinutė į namus slaugytojams



...ir jų vadovams

- **Rizikos vertinimas;**
 - **Darbas komanda;**
 - **Problemų sprendimas „čia ir dabar“;**
 - **Ankstyvas paciento aktyvinimas – 6 val.;**
 - **Ieškoti sprendimų, lavinti savo įgūdžius;**
- Nepamiršti, kad labai svarbu išsaugoti ne tik paciento, bet ir slaugytojo sveikatą ir psichoemocinę būklę!!!**

Děkoju už děmesj

