Improvement of life quality in children with cystic fibrosis by the implementation of a new strategy regarding physical therapy based on incentive techniques and individualized physical training

Goal of the project: Cystic fibrosis is a genetic, life limiting disorder. Daily airway clearance techniques and regular sport activities are recognized as the key element of care for children and teenagers with cystic fibrosis. However the compliance of airway clearance techniques is not satisfied among teenagers. The objective of this study is to optimize physiotherapy management of people with CF in Romania and to create a complex, smart and useful strategy to follow.

The purpose of this research project is to initiate an independent research program, which aims to develop scientific research potential of the team of young scientists and researchers and to obtain significant scientific results, internationally competitive, capitalized through communication and publication in International journals in the field of physiotherapy in cystic fibrosis. Creating a research program that aims to acquire new knowledge to optimize physical therapeutically intervention in patients with cystic fibrosis.2. Building an interdisciplinary team of young scientists and researchers and the integration of researchers who are still in training in such a research team.3. The validation of a complex physical therapy protocol.4. The increase of potential and international visibility of the research team and the host institution of the project.

Short description of the project: Physical therapy is an integral part of cystic fibrosis suffering patient management, being one of the treatment's objectives contributing to the increase of the quality of life of these patients. Success depends on the optimal pairing of individualized physical training, respiratory clearance techniques and inhaling therapies. It is very difficult for young people to accept a very strict and precise therapeutically regimen, especially when it comes to a chronic and incurable disease.

We believe that by developing a flexible protocol based on the combination of incentive techniques, respiratory clearance techniques, and individual physical training based on continuous monitoring, we will increase the compliance and effectiveness of the treatment.

Research Centre for Medical Engineering

Implementation period:
09.08.2010-01.07.2013

Main activities:
We propose the creation of a prospective study lasting 25 months which will include 40 subjects aged between 14 and 18 years, diagnosed with cystic fibrosis and whom have the agreement of their legal gardiens to participate in this research project. Subjects will be randomly assigned into: Group S (study) - they will make individualized physical training based on the modern technologies available in the project (multi-bio-impedantometrie, dynamometer, myotest systems and monitoring heart rate with pulsmeters); incentive therapy techniques (using device trainair) and respiratory clearance; and Group C (control)- they will follow standard physical therapy programs conducted in the National Centre for Cystic Fibrosis, with no incentive therapy techniques.

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Jimmy Carter

The initial evaluation will be followed by reassessment of the same parameters at 6, 12 and 24 months. The design and monitoring of physical therapy programs will be based on data provided by the initial assessment and re-evaluations during the semester. We believe that the results of the final evaluation will illustrate the upgrading of the pursued parameters which result in a better quality of life.

Results:
Participation of the team members in scientific meetings with paper works:
•"Physical Education and Sports in Health Benefit" 38 edition (25 – 26 may 2012)
•18th European Congress of Physical and Rehabilitation Medicine (28 may - 01 June, 2012)
•35th European Cystic Fibrosis Conference, Dublin, Ireland (5-9 June, 2012)
•World Congress of Performance Analysis of Sport IX, 25 – 28 July, 2012, Worcester, England
Conference "diversity education, education diversity ", (20-21 September 2012), Timisoara
•National Conference of Cystic Fibrosis (17-18 November 2012), Bucharest.
•4th Conference Excellence in paediatrics, 28 November- 1 December 2012, Madrid, Spain
•3 articles ISI, Bogdan Almajan-Guta, Alexandra Rusu, Claudiu Avram, Increasing quality of life in Romanian Cystic Fibrosis teenagers using a complex approach of physiotherapy-ISI proceedings, la 18th European Congress of Physical and Rehabilitation Medicine Edition, ogdan Almajan-Guta, S. Gheltofan, M.Oravitan Supervised and home based kinetic programs in children with Down syndrome ISI proceedings, la 18th European Congress of Physical and Rehabilitation Medicine Editione Minerva Medica, 1 with impact factor T. Slavici, B. Almajan-Guta, Efficient recommendation of proper physiotherapy exercises for patients with cystic fibrosis using artificial intelligence techniques.
Journal of Rehabilitation Medicine, 2012 and 3 in international data base: Ornela O. Cluci, Bogdan Almajan-Guta, Claudiu Avram, Alexandra M. Rusu, Importanța testului de mers 6 minute în evaluarea tinerilor cu fibroză chistică din Romania, Timisoara Physical Education and Rehabilitation Journal, nr. 8,vol 4, 2012,ISSN 2065, Almajan Guta B , Rusu A, Cluci O, Almăjan Guță V, S Gheltofan, Rolul şi eficiența aplicării fizioterapiei pe termen scurt şi lung la copiii cu fibroză chistică, Timisoara Physical Education and Rehabilitation Journal, nr.7, vol4, 2012, ISSN 2065-057, Bogdan Almajan-Guta, Modificari ale compozitiei corporale la pacientii cu mucoviscidoza dupa programe complexe de kinetoterapie respiratorie, Oradea, vol 18/ nr 30/2012 Decembrie, pag 5 / 12, Revista Romana de Kinetoterapie, ISSN 1224-6220

Fields of interest:
Physiotherapy and sport activities in patients with cystic fibrosis.

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Research team: Almajan Guta Bogdan, Members Avram Claudiu, Rusu Alexandra, Cluci Ornela

Applicability and transferability of the results:
Combining incentive therapy and individualized sport training with airway clearance techniques leads to significant improvements in respiratory function, body composition and aerobic fitness level which are the most important factors for optimizing quality of life in teenagers with cystic fibrosis. We are working with the patients with CF trying ti improve their quality of life.

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