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HPR professional education, training and competencies

AB1247-HPR AN INTEGRATED APPROACH IN CUSTOMIZED MEDICAL FEMORAL COMPONENT PRODUCTION TO MINIMIZE THE CONDYLE CUT OFF DURING THE TKA

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Background: To prepare the femoral component during the Total knee arthroplasty (TKA), it is needed to cut off the damaged condyle to a dimension matched with one of the available implant sizes in the market. Since there is a variety of humans' knee size and shape, therefore, some parts of the distal femoral are over cut. The solution to this problem is customisation of the implants via a cohesive procedure specifically designed for medical orthopaedic implant production.
Objectives: This research aims to provide a fully integrated system of digital image processing of Magnetic Resonance Imaging (MRI) data and Finite Element Method (FEM) for testing and analysing prior to manufacturing of customized medical femoral component.
Methods: An automatic algorithm to segment MR images from end-of-femur condyle is developed and employed for 3D reconstruction followed by computer-aided design (CAD) system, FEM and incremental sheet forming (ISF) process. In femur segmentation, multi-resolution edge detection is applied that extracts all the edges at bone surfaces. The edge detection process followed by the selection and extraction of strong edges with enhanced active contour technique that results in separation between femur and tibia components. Morphological processing is applied to extract the femur region as the segmented outcome. Consequential of segmentation, a surfaces rendering method is applied for the 3D structure that automatically converts the model into standard tessellation language (STL) format for later CAD system and rapid prototyping preparation. Generated STL file is applied for creating a solid part and solid body. The Proper femoral component is designed using region growing technique then exported to FEM system to calculate the best metal thickness and angles, regarding the normal cartilage, to bear the maximum load with the lighter material. The process of ISF that involves machining and sheet forming parameters is using to manufacture customized medical metal femoral component but in low surface quality which increases the risk of ion release at *in vivo* condition. Therefore, during this technique, optimum parameters using Design of Experiment method are applied to modify and enhance the sheet stretching of final parts.
Results: Applying this integrated system demonstrates a cohesive user-friendly system for creation of patients specific implants while it showed a substantial reduction in implant production time compares to the current manufacturing method. In ISF process optimum parameters are used to increase the rate of stretching together with the best sheet thickness ∼2.5 mm based on validated sheet stretching simulation. The results of this study also show that the high surface quality for femoral component up to ∼Ra 2.527 is achievable using this newly developed method.
Conclusions: An integrated system that combines computational method, CAD, FEM and ISF procedure is developed that shows its potential for manufacturing of customized medical femoral component. Flexibility in size and shape make this system prominent. The best sheet thickness with respect to the cartilage thickness is calculated and obtained with the optimum process parameters for manufacturing section.
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AB1248-HPR THE ROLE OF PATIENT SUPPORT PROGRAMMES IN HEALTH LITERACY OF PATIENTS. RESULTS OF A 1.5-YEAR-LONG HUNGARIAN STUDY

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Background: Health literacy means our ability to find our way in health issues, to understand health information and how to utilize them, that is how we can understand and use health information. Unfortunately, every second person has serious deficit in this area in Hungary.
Objectives: We wished to determine the effectiveness of a specialized patient support program in Hungary.
Methods: The present study was conducted between August, 2015 and December, 2016 in Hungary. Altogether 24 health professionals in 15 investigational sites including rheumatology, gastroenterology and dermatology centres were involved. All participating health professionals was qualified and skilled in patient education. We tried to enrol mainly new patients with relatively little knowledge of their chronic illness. The participation was completely voluntary. The programme was based on 4 presentations on various but closely related topics, presented in small-group sessions by health professionals, and then discussed with the patients. The topics of the lectures were as follows: How to manage stress, associated with the disease? How to deal with the emotional burden of the disease? How to use social support when fighting a chronic disease? How should I tell? (physician-patient communication). The theoretical framework of the lectures was composed by 2 psychiatrists, proficient in the subject. The health professionals had also received extensive training before the programme. Altogether 1950 participants were present at least one of the lectures: Only those were carried forward and allowed to complete the questionnaire who participated in all 4 lectures of different topics. Thus, 480 patients completed the 8 questions of the questionnaire that evaluated the effectiveness of the programme.
Results: Among the 480 patients, who completed the study, 66% had joint and musculoskeletal complaints, 32% had inflammatory skin or gastrointestinal disease and 2% of them suffered from other chronic diseases. Altogether 24% was a member of a patient organization. Two-third of the patients felt better prepared for their consecutive doctor-patient or nurse-patient appointment after participating in the programme. In total, 49% of the responders found the doctor-patient communication lecture most helpful. In addition, 73% of them were able to successfully manage disease-related events and stress. Two-third of the patients wished to contact and/or keep in contact with a patient organization in order to take advantage of the opportunities of social support and 76% understood the place and role of patient organizations in the society. We wish to continue the programme in 2017 and we are aiming to target communication channels appropriate for the needs and opportunities of our age (e.g. Facebook).
Conclusions: The educational programme described above was successful among our patients. We think that appropriate health literacy can lead to the better understanding of the disease and maybe to the improvement of unfavourable health indicators.
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AB1249-HPR THE EFFECT OF TASK-ORIENTED TRAINING ON FUNCTIONALITY, DEXTERITY AND ADL PERFORMANCE IN RHEUMATOID ARTHRITIS

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Background: Rheumatoid arthritis is the most common and most serious of the inflammatory arthritides, and it dominates clinical rheumatological practice (1).This inflammation leads gradually to a destruction of bone and cartilage, responsible for loss of function (2).The main goals of treatment for RA are to prevent or control joint damage, prevent loss of function, and decrease pain (3).
Objectives: The purpose of the study is to investigate the effect of task oriented training on functionality, dexterity and ADL performance in rheumatoic hands.Also the other goal of this study is to bring a new perspective to RA rehabilitation.
Methods: Thirty seven women (16 patients in control group and 17 patients in study group) performed therapy programme. Control group received hand exercise therapy (MCP, DIP, PIP mobilization, range of motion exercise, isometric exercise) and study group received both hand exercise therapy and task oriented training (fork use, drinking water with a glass, face washing, sit up-stand up and t-shirt wearing) twice a week for 5 weeks. Every therapy sessions took 40–45 minutes for study group and 20–25 minutes for control group. According to the patient's condition, the rest interval was given and it was said that the exercises should not be done too fast. The results were evaluated before and after the therapy program with Jamar Hand Dynamometer, Nine Hole Peg Test, Health Assessment Questionaire and Duruöz Hand Index.
Results: Age distribution of participants was 49, 57 ($p>0,005$) and were found to be homogeneously dispersed ($p=0$, 15). Hand grip strength was not statistically