

# E-POSTERS

Abstracts



European Conference on

## Orthopedics and Osteoporosis

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## PATIENTS' VIEWS AND EXPERIENCES OF THEIR PARTICIPATION IN MANAGING NON-SPECIFIC LOW BACK PAIN

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**Background:** Low back pain (LBP) is a common and debilitating clinical problem often seen by physiotherapists. Studies suggest that involving patients in making decisions about managing their illnesses may help to improve patients' adherence and self-management. It is largely unknown why patients with LBP adopt certain decisional roles when making treatment choices. Moreover, qualitative studies addressing experiences of LBP patients' involvement in decision making and more specifically, those in Arabian cultures such as Saudi Arabia is severely lacking.

**Aim:** To investigate patients' experiences of physiotherapy for non-specific LBP, their perceptions of the appropriateness of participation in decision making and information provision and reasons for these preferences.

**Methods:** Seven focus groups of patients with LBP (n=27; 2-6 patients in each group) were included in this study. This study was conducted in Riyadh, Saudi Arabia, using a semi-structured interview technique with open-ended questions.

**Analysis:** Framework analysis was used to analyse data derived from the focus groups.

**Results:** Patients considered their needs for clinical information to be more important than their actual participation in the management process. They wanted more information that they could use to self-manage their LBP condition and to avoid further complications. Their perception was that they lacked the professional knowledge and clinical skills to participate in decision making, in addition to time constraints during physiotherapy visits appeared to be patients' main reasons for a limited desire for participation in clinical settings.

**Conclusion:** Patient self-efficacy was proposed as an essential element of patients' involvement in decision making. Patients' views on making treatment choices may reflect their perceived self-capabilities to take part in decision making in clinical settings. The findings provide information on which future studies can be performed to investigate patient perceived self-capabilities to cope with their LBP condition in relation to their preferences for participation, treatment outcomes and the long term self-management of LBP

### Biography

Wafa AlKhatrawi has expertise in Physiotherapy for more than 20 years in Saudi Arabia. She was graduated in 1996 as a Certified Professional Physiotherapist and then completed her Masters' degree in Pediatric Physiotherapy, in 2004. She received her PhD from King's College London, London, United Kingdom (2013) with an interest in collaborative clinical decision making and patient centered care.

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# THE IMPACT ON KNEE AND FOOT: COMPARISON OF BAREFOOT, MINIMALIST SHOD AND TRADITIONAL SHOD RUNNING

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Participation in sports and physical activity provides physical, mental, social and economic benefits to both the individual and the society. Among the different types of physical activities, walking, jogging and running are the most popular ones. Since the latter part of the 20<sup>th</sup> century, running has become a popular sport around the world. In the last few decades, the number of people finishing a marathon has increased significantly. The main reasons for the increasing popularity of running is its accessibility and low participation cost. Humans are habituated for barefoot running for millions of years. Earliest recorded evidence of foot wear usage dates back to 8300 years ago where as the modern running shoes were invented around 1970s. Yet we don't know with this sudden shift to foot wear running caused any changes in injuries in running cohort. Recently, there is an increased interest among the runners for minimalist shoe and barefoot running. Hence it is imperative know whether this trend is mere a fad or with evidence. It has been found that there is difference in foot strike patterns for barefoot running (more of fore and mid foot strike) and shod running (more of hind foot strike). They cause difference in load and injury patterns in lower limb especially knee and foot. The paper is a review comparing 3 categories of runners for the kinetics, kinematics, injury patterns, difference in foot muscle volumes and economy of running from scientific studies.

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# MEDICO-LEGAL ETHICAL ISSUES IN SPORTS MEDICINE

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**E**thical conflicts arise from the medical clinicians' position within the sports medicine hierarchy. One needs to question why the ethics of sports medicine is different than the ethics of public health. The traditional clinician patient relationship which holds confidentiality and patient best interests as central concerns may be compromised by the unique structure in sports medicine, particularly at the elite level. Sports medicine at the elite level such as premier league football occurs within a complex setting that may include the pressure of the large amount of money involved. This may impose pressure on the medical clinicians by the coaches, management, the media and sponsors. The medico-legal implications and the possible resultant effect on Medical ethics in this environment, are unique and of paramount importance. This presentation will be addressing the medico-legal issues in all Sports medicine, including confidentiality, consent, conflict of interest and medico-legal records, bearing in mind that the medical ethical duty is always to the athlete specific, pertinent case studies will be included.

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# A RARE CASE OF TRAUMATIC POSTERIOR DISLOCATION OF HIP IN A 7 YEAR OLD CHILD FOLLOWING TRIVIAL TRAUMA

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**T**raumatic hip dislocation is relatively rare in children. It accounts for 5% of total hip dislocations in all age groups. We reported a case of hip dislocation in 7 year old child following trivial trauma. Diagnosis was confirmed clinically and radiologically. Reduction was done after four hours of injury under general anaesthesia and fluoroscopic guidance. Post reduction radiograph and computed tomographic scans showed joint congruency. Post reduction abduction bar was given and child kept non weight bearing initially and allowed weight bearing gradually as tolerated. At 10 weeks post reduction, patient has full range of motion at right hip joint and able to walk with full weight bearing. Reduction should be done as soon as possible to avoid complications like avascular necrosis.

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# OUTCOME OF PRIMARY LEIOMYOSARCOMA OF BONE: A SINGLE CENTER EXPERIENCE

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**Background & Objectives:** Primary leiomyosarcoma of bone is a rare and a diagnostically challenging tumor entity. To our knowledge, around 90 cases have been described with the largest by Antonescu et al. in 1997. We have reviewed our experience in treating patients with primary leiomyosarcoma of bone between 2010 and 2017, trying to identify prognostic indicators and outcomes.

**Materials & Methods:** We retrospectively reviewed cases of six patients from our database, who were diagnosed as primary leiomyosarcoma of bone from 2010 to 2017.

**Results:** Over a 7-year period, we identified six cases that fulfilled the diagnostic criteria in five men and one female, with age ranging from 19 to 66 years (mean-37.66 years). No case had any metastasis at presentation and neither of them had any lymph nodal involvement. All cases underwent limb salvage surgery (five megaprosthesis, one intercalary resection and fibular grafting). On final histological evaluation, three cases were grade 3 and three more were grade 2 as per FNLCC grading system. Three patients were given adjuvant chemotherapy and two were given adjuvant radiotherapy. On follow up, none of the patient had local recurrence but one had local infection which was managed conservatively with antibiotics and debridement. Two patients developed distant metastasis both were of grade 3 histology. Mean event free survival was 21.16 months and mean overall survival was 26.83 months.

**Conclusion:** Primary leiomyosarcomas of bone are aggressive tumours which should be treated just like osteosarcoma but, according to our experience. Primary leiomyosarcomas has a slightly better prognosis than patients with osteosarcoma. Surgical resection remains the mainstay of management of LMS of bone. The role of adjuvant chemotherapy or radiotherapy requires further evaluation.

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# POSTERIOR SACROILIAC JOINT LIGAMENTS AND THEIR POTENTIAL INFLUENCE ON THE LOW BACK AND PELVIC PAIN

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**T**he sacroiliac joint (SIJ) is structured by articular surfaces between the sacral and iliac bones. The SIJ embraces different functions, because it connects the spine with pelvis, which permits the soaking up of vertical forces from spine and thus, transferring vertical forces to the pelvis and lower extremities. The first goal of the SIJ is to preserve stability that is partly done by the muscles surrounding the SIJ and realized by various procedures, encompassing a large complex of ligaments connected to the SIJ. The range of motion of the SIJ is evaluated to be around 2 to 4 degrees. 35 muscles connected to the sacrum bone or innominate work together in synergy with the fascia and ligaments to produce movement and ensure stability of the trunk and lower extremities. The SIJ is an important source of pelvic and low back pain (LBP), which should be taken into consideration in the differential diagnosis of pelvic and LBP. The prevalence of SIJ pain tends to be underappreciated because no research has been done concerning the SIJ posterior ligaments. In the United States and the rest of the world, there is an increased prevalence of LBP and its associated costs. In Europe, the augmentation of LBP cases in an adult population is due to sedentary activities such as working with a computer. We have conducted a pilot study composed of 20 patients. After applying two different osteopathic release techniques on the posterior SIJ ligaments, a reduction of the pain was observed in 18 patients, from which 12 had no pain anymore and six had only a reduction of the intensity of pain. In two cases, the applied techniques did not produce any effect. There is a necessity to investigate the potential function of SIJ posterior ligaments at generating LBP.

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# PATIENT SPECIFIC ORTHOPAEDICS: A PROOF OF CONCEPT OF CLINICAL STUDY

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**Introduction:** We live in an era, where personalized medicine became an entity that interest. Other terms are used interchangeably such as, patient specific medicine, precision medicine, stratified medicine. In surgery, this term is not commonly used outside. Orthopaedics has increasing, dental, maxillofacial and neurosurgery with patient specific orthopaedics being the most commonly described.

**Methods:** 14 patents were filed in the field of patient specific orthopaedics. This study is a proof of concept clinical trial and aims to answer the question: is patient-specific orthopaedics an applicable modality? We used 3-D printing technology (desktop and industrial) in a hospital based fashion, where all five steps of this technique (imaging, planning, production of templates, packing/sterilization and surgery) were under the control of the surgeon and performed in one location (our hospital). Four different patient-specific applications: models, guides (instrument), implants and grafts were considered. We assessed the demand, the applicability and affordability for using these techniques for 370 surgical procedures in our institute.

**Results:** In our institute, there was a demand to use this technique for complex cases, late presentation and revision surgery. The technique was not applicable for endoscopic or arthroscopic surgery but were used almost routinely (90% of cases) in the form of patient specific guides (instruments) for total and uni compartmental knee arthroplasty. Also, it was used less frequently (50 cases) for hip, shoulder, spine trauma, deformity, and tumour surgery. Patient specific implant was very expensive technique and unaffordable but was used for very complex cases such as pelvic discontinuity. Patient specific bone graft has not been applied yet and it appears that it has less demand, difficult applicability and high cost. The process of hospital-based was feasible and practically applicable. The outcome of the process for 320 cases in knee replacement showed that CT-based imaging was practically easy and affordable. Planning was controlled by the surgeon. Template production showed that polyamide (nylon) is the most preferred material being autoclavable. It was not easy to print nylon using desktop 3-D printers but it worked after several attempts of failure. Industrial 3-D printer is more efficient and more expensive than desktop 3-D printers. The whole process could be done in as short duration within three days.

**Conclusion:** Patient specific orthopaedics is an applicable modality, it has a demand and reasonably affordable. The patient specific instrument for knee replacement was the most common application. The hospital-based technique was practical, less-expensive and time-saving but the use of desktop 3-D printer is still experimental and should not be used in clinical practice until approved. Patient specific orthopaedics has the potential to improve the results of conventional techniques, provide new treatment and make surgery easier.

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# CLINICAL VISION ON DESIGN AND PERFORMANCE OF LOWER LIMB EXOSKELETON

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**H**uman motion is a complex, multi-disciplinary process to achieve finally, safe, balanced, bipedal ambulatory movement. When an individual loses his ambulatory function due to any pathological aetiology with an irreversible injury like spinal cord injury, stroke or any degenerative disorder. The recent exoskeletons focus on only one feature of motion process, which is ambulatory movement (flexion/extension of hip/knee), making balance mission on the crutches in patient's hands and these cases suffer from shoulder and elbow pain due to massive weight bearing on them during motion. Also it prevents patients of higher injuries to use these technologies because upper limb was affected by injury. This notes and problems let us to look in the design and try integrate other elements of human motion process in the design and functioning of exoskeleton. We designed bio-inspired technologies and neuro-like processing systems to self-balance the exoskeleton and the pilot at during all motion patterns and protect them from falling, achieving safety and dependency.

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# THE SIGMOID NOTCHES OF THE PROXIMAL SEGMENT OF ULNA: INFERENTIAL MORPHOMETRY AND VOLUMETRY

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**Objective:** The elbow joint is compound joint that can be affected by several pathologies that may require medical and surgical interference. This experimental analysis aims to infer data about the morphometry of the proximal segment of the ulna and its articular surfaces represented by the greater sigmoid notch (trochlear notch) and lesser sigmoid notch (radial notch).

**Methods:** A sample of 50 ulnae (n=50, 27 right and 23 left) was studied in connection with the surface area of the sigmoid notches (SA), weight of ulna, and the volume of proximal portion of ulna (the olecranon process down to inferior margin of the radial notch), and the length of ulna (L). Longitudinal dimensional parameters were also studied including; the straight distance between the highest point (tip) of the olecranon and that of the coronoid process (OCD), and the mid-olecranon thickness in mediolateral (T1) and anteroposterior orientation (T2).

**Results:** It is inferred that there were no significant differences in between right versus left ulnae and about the majority of morphometric parameters with an exception for OCD (22.47 vs. 20.75, p-value=0.002). There was a positive correlation in between all the parameters, although the strongest associations were observed in between OCD, the area of the trochlear notch, and the weight of ulna.

**Conclusion:** Key findings of this study are valuable to biomedical engineers, medical professionals including orthopaedic surgeons and rheumatologists, evolutionary biologist, and physical anthropologist. Data from this study apply to (reverse) engineer the perfect implant for the elbow joint.

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# LOW BACK PAIN IN CHILDHOOD AND ADOLESCENT PHASE: CONSEQUENCES, PREVALENCE, RISK FACTORS AND PREVENTIVE PROGRAM

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**L**ow back pain (LBP) has become a growing public health problem in adolescents, presenting a relatively high prevalence during school age. Several studies verified the prevalence of annual LBP in the world and the values varied between 13% and 51%. In southern Portugal, 966 adolescents were evaluated, aged between 10 and 16 years and the results revealed that 15.7% of students had LBP at the present time, 47.2% had experienced it in the last year and 62.1% had lifetime prevalence of LBP (Minghelli et al., 2014). LBP represents a significant negative impact, being commonly associated with the demand for health care, medication use, increasing absenteeism and with a decrease in quality of life. Because of that, the presence of LBP can lead to very high economic consequences, both due to direct financial costs and due to absenteeism. Several factors may be involved in the pathogenesis of LBP, such as genetic, psychosocial, physiological, anthropometric and environmental, among them ethnicity, age, sex, smoking, obesity, physical activity practice, sedentary activities such as television watching and computer use, adoption of wrong postures and incorrect transportation and excess weight in school backpacks. Minghelli et al. study found that students who sit with the spine incorrectly positioned presented 2.49 (95% CI: 1.91-3.2,  $p < 0.001$ ) greater probability of having LBP, and students using improper positions for watching TV or playing games have 2.01 (95% CI: 1.55-2.61,  $p < 0.001$ ) greater probabilities compared to those who adopted correct postures. Physiotherapy in the school health field emerges with the objective of promoting knowledge and health conditions in this specific area of LBP and postural changes, optimizing the technical and personal skills of teachers and students, and developing individual and collective health potential. The performance of the Physiotherapist in schools should involve a salutogenic approach in order to create in schools a stimulating environment of creativity and a critical sense, and not just an intervention aiming at changes in risk factors. Empowerment, capacity and motivation must be given so that adolescents and the entire school community are responsible for their own health choices. This presentation will show a preventive physiotherapy program at the school, through health education sessions and modifications of the school environment.

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# ***IL-12* CYTOKINE FAMILY: NEW PLAYERS IN PATHOGENESIS OF OSTEOPOROSIS**

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**T**he interleukin 12 (*IL-12*) family is unique in having the only heterodimeric cytokines, including *IL-12*, *IL-23*, *IL-27* and *IL-35*. Despite sharing many structural features and molecular partners, *IL-12* family cytokines have diverse functional effects. Both *IL-12* and *IL-23* are pro-inflammatory, and have been implicated in a number of autoimmune diseases. Monoclonal antibody against *IL-12/IL23* (Ustekinumab) has been used for treatment of psoriatic arthritis. *IL-23* deficient mice were found to be protected against development of collagen induced arthritis and moreover *IL-17* producing CD4<sup>+</sup> T cells were absent in *IL-23* deficient mice. The remaining two cytokines of the family, *IL-27* and *IL-35* are pre-dominantly anti-inflammatory in nature. Studies have shown that deletion of *IL-27* receptor in mice leads to excessive *Th17* responses in experimental autoimmune encephalomyelitis (EAE). *IL-27* also has been reported to provide protection against collagen-induced arthritis and rheumatoid arthritis by suppressing *Th17* cells and augmenting T regulatory cell differentiation. Apart from *IL-27*, *IL-35*, serum levels are found to be quite low in conditions of rheumatoid arthritis patients. While all these cytokines have diverse functions, their role in post-menopausal osteoporosis was not looked into. Our group has determined the role of *IL-27* cytokine and *IL-23* neutralizing antibody in estrogen deficiency induced bone loss conditions. Our studies revealed the osteoprotective effects of *IL-27* and anti-*IL-23* antibody by suppression of *Th17* differentiation, the major osteoclastogenic T helper subset and restoration of ovariectomy induced deterioration of trabecular bone microarchitecture. Our studies form a strong basis for using humanized *IL-27* or neutralizing *IL-23* antibody towards the treatment of postmenopausal osteoporosis.

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# IMPACT OF RESISTANCE TRAINING, PLYOMETRIC TRAINING AND SAQ TRAINING ON SPEED AMONG UNIVERSITY MEN STUDENTS

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**Introduction:** Resistance training is any exercise that causes the muscles to contract against an external resistance with the expectation of increases in strength, tone, mass, and/or endurance. Plyometric training or jump training are types of exercises in which muscles exert maximum force in short intervals of time, with the goal of increasing power (speed-strength). This training focuses on learning to move from a muscle extension to a contraction in a rapid or explosive manner, such as in specialized repeated jumping. SAQ (speed, agility, quickness) training consists of short, intense drills that involve quick acceleration and deceleration while moving backward, forward or side-to-side. The purpose of the study is to find out the impact of resistance training, plyometric training and SAQ training on speed among University men students.

**Method:** 36 men students were taken as subjects of the study and they were divided into three groups. Group 1 underwent resistance training, group 2 underwent plyometric training and group 3 underwent SAQ training for a period of six weeks. The frequency of training was four days per week for duration of 110 minutes which included 10 minutes warming up and 10 minutes cooling down. 50 meter run was taken as the test criterion to assess the speed. Pre-test and post-test data were collected for all the three groups and were analyzed statistically.

**Results:** The pretest post-test scores using analysis of covariance were analyzed statistically. The collected data showed significant differences on all the three groups for the selected variable speed. The adjusted post-test mean for group 1, group 2 and group 3 were 6.56, 6.11 and 6.71 respectively. The mean differences were 0.60, 0.45, and 0.15.

**Conclusion:** Plyometric training showed more impact than the other two modes of training.

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# UNDERSTANDING OF KLIPPEL FEIL SYNDROME: A CASE REPORT

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**Background:** Klippel Feil syndrome was first described by Maurice Klippel and Andre Feil in 1912 in patient with congenital fusion of cervical vertebrae. Classical clinical triad of Klippel- Feil syndrome is lower posterior hair line, short neck and restriction of head and neck movements.

**Case report:** A 35 year old young female directly presented to outpatient department of physiotherapy with complain of pain in neck and morning stiffness. While examined there was clinical triad i.e. lower posterior hair line, short neck and biomechanical alteration in cervical spine range of motion were noted. Still she did not have any neurological complaints. Single level cervical fusion was reported on radiological investigations.

**Conclusion:** Axial symptoms neck pain, neck stiffness and neck range of motion restriction are the predominant symptoms in symptomatic KFS patient. The present case fitted in KFS Type II patients who present with a single fused cervical segment.

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## GROIN AND HIP QUANDARIES

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**S**tudies have shown that a combination of hip and groin injuries occur in about 14% of the population. In football, 70% of male soccer players experience hip and/or groin pain during 1 season. Traditionally, there has been little international consensus regarding terminology, definitions and classification of groin pain in athletes. Consequently, there is minimal understanding of diagnosis, pathophysiology, investigation or management. During the past decade, the field has evolved and an evidence-based understanding is slowly emerging. As the diagnosis is multifactorial, one of the key points is to understand the entire anatomy particularly, the functional anatomy. Groin and hip physical testing of impairments, function, and performance have been documented. However, many of the studies are of poor quality and the results of research difficult to interpret and implement into practice. The prevalence of radiographic groin and hip abnormalities is considerable. It is imperative that one must identify the relationship between these radiographic abnormalities and the clinically symptomatic pathologies. Further, there is no consensus over the time span for non-surgical treatment or as to the ideal operating technique. Improvements are needed in relation to nonsurgical and surgical management and the timing of these management approaches. In spite of minimal evidence-based medicine, and as our understanding of hip and groin complexities, including hip joint restriction, FAIS and chondral injuries and their causes grows, future efforts should focus on prevention. Firstly, one needs to assess how the patient's functional movement influences the hip and the pubic symphysis, as well as the entire kinetic chain, including the neuro-motor control.

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# THORACIC OUTLET SYNDROME

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**T**he use of hand held devices (HHD) such as mobile phones, game controls, tablets, portable media players and personal digital assistants have increased dramatically in past decade. This drastic change has led to new batch of difficult to treat, musculoskeletal disorders of the upper extremities such as myofascial pain syndrome of neck and upper back and thoracic outlet syndrome. The thoracic outlet anatomy and how the bundle passes through the passageway is complex for even musculoskeletal experts. So for doctors trained in other specialties there can be an inadequate understanding about nature and cause of thoracic outlet syndrome. A syndrome rather than a disease, the Mayo Clinic, Cleveland Clinic and the National Institute of neurological disorders and stroke, plus top 10 ranked hospitals for neurology and neurosurgery agree persistent compression of nerves, arteries and veins traveling through the thoracic outlet is what leads to thoracic outlet syndrome. I will discuss the three models of human movement, the inverted pendulum model, the spring-mass model and the integrated spring-mass model (ISMM). The (ISMM), which integrates the spring suspension systems of the foot and shoulder region as well as the torsion spring of the spine and the mass, the head. I will discuss my clinical findings show compressive disorders like TOS and herniated discs are merely an over control of tension on the human spring mechanism leading to these syndromes. I will give brief review of the symptoms and their patterns, the common orthopedic tests, and diagnostic tests, the 16 different common conservative therapies and the 10 reasons for when surgery is medically necessary. I will discuss an alternative treatment for this disorder based on the integrated spring mass model.

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# PRESENTATION ON ROLE OF PHYSIOTHERAPY IN MANAGEMENT OF POTT'S DISEASE AT KUNDIAWA

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**P**ott's disease, also known as spinal tuberculosis (TB) which commonly leads to a gradual onset of neurological deficits. Tuberculosis is on rise in the developing countries as in Papua New Guinea. Kundiawa General Hospital is one of the hospitals in the country which is currently managing Pott's disease with specific physiotherapy methods and techniques over the last 20 years. Retrospective analysis of 253 patients documented 158, from medical admission records, years 1996 to 2018. Physiotherapy intervention was based on: clinical examination, spine X-ray, neuromuscular skeletal assessment (Freckles grading). A total of 253 of Pott's diseases patients, 158 were documented, out of that figure, 63 patients with neurological deficits and paravertebral abscess underwent surgery, physiotherapy and anti-tuberculosis treatment and have benefited well. The other 95 patients without neurological deficits were on pure physiotherapy and anti-tuberculosis and also benefited. Thorough physiotherapy neuromuscular skeletal assessment contributes the successful management of the spine and limbs using treatment methods of back care, log rolling techniques, back extension, stimulations exercises and power exercises program of the back and limbs. Patients with gibbous underwent distraction of bilateral uppers and lower limbs by distracting the spine. Majority of patients benefited well with early physiotherapy interventions and discharged home with POP corsets. Most of them, 154 (94.2%) have walked and lived a normal live at home after full physiotherapy rehabilitation program with the awareness and continuity of Community based rehabilitation program. It has been a successful multi- disciplinary approach of surgical, medical, physiotherapy, nursing and family was involved.

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# AYURVEDIC GUGGULU FORMULATIONS: AS SUPPORT THERAPY TO PHYSIOTHERAPY IN TREATING NERVOLOGICAL DISORDERS

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Ayurveda is an ancient system of medicine, evolved in India. There are various time tested formulations in Ayurveda which are extremely useful in treating neurological disorders. There are six types of treatments offered by Ayurveda of which we discuss *rasayana* here as support therapy. It works along physiotherapy in treating neurological disorders. *Rasayana* helps in promoting strength and vitality, in general it promotes general wellness and optimises senses. One of the major benefit of *rasayana* is that it treats wear and tear of the body and help rebuilding it. Paralysis, hemiplegia, Parkinsons, Alzheimers, stroke are most commonly seen besides various motor neuron diseases, inter-vertebral disc prolapse, facial paralysis, polyneuropathy and many such conditions can be treated with various *guggulu rasayanas*. Guggul, or *Bdellium* is a gum resin, produced by the stem of a small shrub (*Commiphora wightii*). It is found in dry/arid forests of India. There are various forms of each herbs; for example *guggulu* to be *Trayodashng guggulu*, *Yograj guggulu*, *Maharasanadi guggulu*, *Punarnavadi guggulu*. These *rasayana* in combination with other herbs helps strengthening nerves, bones, joints, muscles and ligaments. Though Ayurveda is person specific therapy, *guggulu* formulation being administered over 1000s of years can be generalized; above Ayurvedic formulations of *guggulu* has helped in treating above conditions giving an alternate support to the patients. The paper describes various formulations of *guggulu* and other herbs. It discusses in detail, their effects on the the patients. It concludes saying neurological conditions can be treated with help of *guggulu rasayan*.

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# SHOULDER JOINT INFECTION WITH NEGATIVE CULTURE RESULTS: CLINICAL CHARACTERISTICS AND TREATMENT OUTCOME

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**Background:** The incidence of septic arthritis of the shoulder joint is increasing as the population ages. The prevalence of the shoulder infection is also increasing due to the growing use of arthroscopy and expansion of procedures in the shoulder. Accurate diagnosis is required to get optimum treatment outcomes. However, cultures do not always identify all microorganisms even in symptomatic infection patients. The incidence of negative culture ranges from 0 to 25%. Few studies have reported the clinical features and treatment outcomes of culture-negative shoulder infections. Consequently, the aim of this study was to compare the clinical characteristics and treatment outcome of shoulder infections patients with negative culture and those with positive culture results. Our hypothesis suggests that culture-negative infections would have less favourable outcome.

**Methods:** We retrospectively reviewed data from 36 patients with shoulder infection between Jun' 2004 and Mar' 2015, including 17 culture-negative and 19 culture-positive cases of shoulder infection. The minimum follow-up duration monitoring was 1.2 years (mean, 5±3.8 years; range, 1.2-11 years). We assessed patient's preoperative demographic characteristics, laboratory markers, imaging and functional scores, in addition to evaluation of both intraoperative and postoperative findings between the two groups.

**Results:** The culture negative patients, were 17 out of 36 (47.2%), showed lower WBC and CRP preoperative levels, and significantly lower number of repeated surgical debridement (culture negative/culture-positive=1.2±0.4/2.4±1.7) ( $p=0.002$ ) with no osteomyelitis. In multiple logistic regression, the bony destruction on plain radiograph [odds ratio (OR) =9.686, 95% confidence interval (CI): 1.0-91.8] ( $p=0.04$ ) and the number of surgical debridement (OR=5.3, 95% CI: 1.3-21.6) ( $p=0.02$ ). There was no significant difference in age, gender, host conditions, initial diagnosis, preoperative symptoms, previous antibiotics treatment, other laboratory data or functional scores between the two groups.

**Conclusion:** Culture-negative infection is less severe with no osteomyelitis and can be controlled better than culture-positive infection. Therefore, culture negativity is not necessarily a negative prognostic factor for shoulder joint infection.

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# WHAT INFLUENCES THE RESULTS IN MACI? A 2-5 YEAR FOLLOW-UP STUDY

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**Purpose:** This study aimed to investigate the outcomes of matrix-associated autologous chondrocyte implantation (MACI) on the treatment of osteochondral lesions in the knee joint and to determine the factors affecting the functional results.

**Methods:** The study included 34 patients with a cartilage defect in the knee joint who were applied MACI® (Genzyme Biosurgery, Cambridge, Massachusetts, USA) with the two-staged surgical technique between the years 2010-2015. The defect localizations and sizes, past surgeries and accompanying surgeries were recorded. The clinical results were measured with modified Cincinnati, Tegner Lysholm scores.

**Results:** As a result of the repeated measures at postoperatively, it was found that the patients had increased Lysholm and Cincinnati functional scores after 6 months ( $p=0.0001$ ). The established increase was seen as significant on review of the scale scores of the male patients. When the mean value of Lysholm and Cincinnati functional scores were assessed according to BMI group, no statistically significant difference was determined ( $p=0.941$  and  $p=0.779$ ). The measurements at 6 and 12 months of the follow up indicated that the mean scores of the group with no concomitant pathologies were significantly higher than those of the group with concomitant pathologies.

**Conclusion:** The MACI application provides good and stable outcomes for focal cartilage damage in young patients. In order to obtain significant results after autologous chondrocyte implantation, the selection of appropriate patients without concomitant pathologies is required.

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# OSTEOPENIA MISSED OPPORTUNITIES FOR PREVENTION OF FRACTURE

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**T**he incidence of fracture in patients with reduced bone density is high. Fracture prevention in patients with reduced bone density is of great importance, recognizing the clinical risk factors that contribute to the formation of fracture. Risk scores can be used to predict fracture risk among people with a low bone density only if the risk scores that are being used combine clinical risk factors with BMD testing results, such as FRAX (the World Health Organization Fracture Risk Assessment Tool). Fracture risk assessment is necessary for patients with osteopenia in order to determine the therapeutic approach. Biochemical markers of bone remodelling are used for individual assessment of bone loss, assessment of changes in bone remodelling in a shorter period of time, monitoring of the therapeutic effect, therapeutic adherence and complications, assessment of fracture risk initially and during the application of medical therapy as they are independent predictors of fracture risk. Pharmacotherapy is recommended for people with osteopenia who have a 10-year risk for hip fractures 3% or major osteoporotic fractures 20% according to the FRAX questionnaire. Pharmacotherapy of osteopenia in people with increased fracture risk has the goal of preventing future fractures by stabilizing or increasing bone mineral density (BMD). In younger postmenopausal women with osteopenia and menopausal symptoms, estrogen/progestin plays a significant role in the treatment. An ideal treatment for men and women with osteopenia and increased risk for fractures would be anabolic therapy (teriparatide), followed by anti-resorptive therapy and denosumab.

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