BOOK REVIEW / PRIKAZ KNJIGE NIKOLINO ŽURA ET AL.: CLINICAL KINESIOLOGY

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Book review

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Clinical Kinesiology is primarily intended as a textbook for physiotherapy and occupational therapy students, but also for other medical experts, such as physiatrists, orthopaedists, surgeons, rheumatologists, general practitioners, as well as experts focused on the locomotor system such as kinesiologists and coaches of different sports. The authors of this book – Nikolino Žura, Ivan Jarak, Dalibor Kiseljak, Marinela Jadanec Đurin, Ljiljana Vrcić-Kiseljak, Ana Debeljak De Marini and Josip Draženović – have been extensively involved in the field of clinical kinesiology through their research on the kinetic, kinematic, and biomechanical principles of movement in healthy, as well as pathological systems. This book has been reviewed by eminent Croatian scientists and academicians including Marko Pećina, Porin Perić, PhD, and Krešimir Rotim, PhD.

The book consists of 14 chapters detailing different aspects of clinical kinesiology, including 137 photographs and drawings. Chapter 13 includes a detailed glossary, which provides easy access to the terms used in the book by listing all the page numbers where the requested term appears. The bibliography in the final chapter (Nr. 14) consists of 70 citations, mainly from the most recent literature on the topics covered in the text. The content is systematically and logically organised across each chapter, as well as throughout the entire book. All the chapters are structured based on the same format explanation of basic terms, followed by clarification and expansion of the topic, and lastly, the most common diseases and impairments related to the topic being addressed in the chapter. The concluding sections of Chapters 2-10 are particularly interesting because they contain descriptions of the most common diseases and impairments associated with the chosen part of the body being presented in that chapter. These descriptions provide a basic clinical picture of the diseases, making it interesting for readers interested in the pathology of these systems such as students in the healthcare field, as well as for a wider audience. Bolded keywords serve as a graphic feature of the text, drawing the attention of readers to the keywords in each chapter and helping them go through the text more easily. The structure of the book, as well as numerous photographs and tables, enhances the reading experience and facilitates better understanding of the content, thus providing students with a reliable basis for further education and clinicians and other experts with a suitable refresher. Pictures from the first edition of the well-known book *Gray's Anatomy* are a special attraction of the *Clinical Kinesiology* book. All chapters (except *General clinical kinesiology (Chapter 1)* and *Posture (Chapter 11)*

provide an overview of osteology, arthrology, and myology of the parts of the body being presented in that chapter, along with other relevant content.

Clinical Kinesiology begins with a *Preface* written by Nikolino Žura, in which the author presents the changes documented throughout history in the patterns of movement, as well as in physical activity related to common impairments and diseases of the locomotor system. He also cites the lack of literature in the field of clinical kinesiology in the Croatian language as an incentive to write this book. The subchapter *Kinematics* in Chapter 1, which is entitled *General clinical kinesiology*, deals at length with the planes of motion and their corresponding axes, while the subchapter *Osteokinematics* presents basic movements of the body parts. The table shows movements in all three motion planes in joints of the upper and lower limbs, with the possible range of motion of each joint. The open and closed kinematic chain and the rule of three are explained and presented using a clear diagram, while arthrokinematics is presented using a table of anatomical and functional classifications of true joints, including corresponding examples. The reader can also find detailed information on the open- and closed-packed positions of joints in this chapter. In the subchapter *Kinetics,* the author deals with causes of motion, particularly with force and momentum, i.e., how muscle contractions generate force that can stimulate body parts to act as a lever with the aim of moving the body. This subchapter contains four sections, three figures, a table, and a graph that aim to help the reader grasp the material more successfully.

Chapter 2, entitled *Neck and trunk*, consists of anatomical presentations of the cervical spine and trunk, as well as details on the osteokinematic, arthrokinematic, and myological presentations of these parts of the body, complemented by 14 figures. The section addressing chest muscles and breathing, which presents not only the position of the muscles, but also the breathing mechanism from the kinesiological aspect, is a very interesting part of this chapter. The last section of this chapter is focused on a brief presentation of neck and trunk impairments along with short descriptions: the authors also explain torticollis, acute neck injuries, spinal osteoporosis, ankylosing spondylitis, degenerative changes in the spine, and scoliosis.

The title of Chapter 3 is *Head:* this interesting chapter describes and explains anatomical and functional relationships between the temporomandibular joints, phonatory muscles, mimic muscles, cranial vault muscles, eye cavity area and nose area, lower jaw muscles, and tongue muscles. This chapter is illustrated by 10 figures and offers a brief overview of the most common disorders of the head region such as paresis *n. facialis* and temporomandibular dysfunction.

Chapter 4, entitled *Pelvis*, begins with a historical account of the development of the pelvis in humans and goes on to make connections with the changes related to bipedal locomotion and gait function. The differences between the male and female pelvis is clearly visible in a well-designed table. The osteology and arthrology of the pelvis are also presented in this chapter, while pelvic movement and its function during gait, mobility of sacroiliac joints, as well as functional mobility of the trunk and the pelvis are explained through the kinematics of the pelvis. Furthermore, the authors explain the way in which unequal leg length can affect pelvic movements and postural adjustments, as well as the causes of hypermobility and hypomobility of the sacroiliac joints, and the effects of pregnancy on pelvic joints. The last part of the chapter describes the most common disorders and impairments of the pelvis such as decreased mobility of the sacroiliac joints, diastasis, and piriformis syndrome. This chapter contains 10 figures that facilitate easy reading and understanding of the text.

The next chapter (Nr. 5), entitled *Hip*, clearly presents all the parts relevant to clinical kinesiology of the hip. The author of this chapter describes in detail the biomechanical principles of the hip and the consequences of weakness of certain muscles and limping. The biomechanical description of the use of aids when limping is very interesting. The final section of the chapter describes the most common disorders and impairments, such as hip osteoarthritis, developmental dysplasia of

the hip, Legg-Calve-Perthes disease, and femoral neck fracture. This chapter is further enriched by nine figures.

Chapter 6, entitled *Knee*, offers an excellent summary of the knee joint and the accompanying soft tissue structures, along with numerous interesting facts. The tabular presentation of the knee joint loading during various activities of daily living is particularly interesting, as well as the presentation of the knee range of motion during some activities of daily living and the presentation of the patellofemoral joint loading in some recreational activities. Thus, making it especially interesting for physiotherapists and kinesiologists who work with the elderly population and their physical health. Chapter 6 ends with information on knee angular deformities (*genu varum* and *genu valgum*), knee osteoarthritis, Baker cyst, meniscus damage, anterior cruciate ligament rupture, and jumper's knee. The text in this chapter is enriched with four tables and eight figures facilitating the understanding of the content.

Apart from a comprehensive osteological and osteokinematic analysis of the ankle and foot bones, Chapter 7, entitled *Ankle*, also presents an excellent arthrological and kinematic foot analysis, an analysis of the ankle movements and function, and the functional connection of the ankle with the knee and the hip. A detailed explanation of the functions of the upper and lower ankle joint, as well as a myologic presentation of the ankle and the foot are extremely valuable to all the experts in this field. The chapter is illustrated by 13 photographs. In the last section of the chapter, the author explains the most common disorders and impairments of the ankle and the foot, such as *pes cavus, pes planus, halllux valgus,* metatarsalgia, shin splints, and so on.

The contents of Chapter 8, entitled *Shoulder and shoulder girdle*, are complimented by eight figures depicting bones, joints, shoulder and shoulder girdle muscles. This chapter provides an in-depth description of shoulder function, scapulohumeral rhythm, dynamic stability, and coordinated activity of the shoulder muscle when performing the most frequent movements, which is particularly helpful for medical and other students who plan to work in this field in the future. Similar to the other chapters in *Clinical Kinesiology*, this chapter ends with information on the most common shoulder and shoulder girdle problems such as subluxation and luxation, reduced range of motion in the shoulder joint, and fractures.

Chapter 9, entitled *Elbow*, provides a detailed description of relevant and necessary information about this joint through osteology, arthrology, arthrokinematics, and myology of the elbow. The text is complemented by eight figures. In the section of the chapter dealing with disorders and impairments of the elbow, tennis and golfer's elbows are listed as the most common syndromes associated with overstraining of this joint. Among other disorders, cubital and radial tunnel syndromes are also listed in this section of the chapter.

Chapter 10, entitled *Hand*, presents a detailed description of the osteology of the hand. The chapter is complemented by nine figures. In addition to describing movements of different hand joints in detail, the end-feel, in other words, valuable information related to assessing the functionality of a damaged hand, is also specified. The final section of the chapter deals with disorders and impairments of the hand, such as primary and secondary osteoarthritis, De Quervain tenosynovitis, carpal tunnel syndrome, rheumatoid arthritis, and Colles and Smith fractures.

In Chapter 11 (entitled *Posture*), posture is dealt with as a complex neuromuscular function. This chapter also presents good posture and body segments involved in achieving it, as well as physiological and biomechanical variables related to upright position. The intersegmental relationship in normal posture while standing, as well as in dynamic patterns such as walking, is described throughout the chapter as a model to identify pathological deviations when assessing both dynamic and standing posture. There are two figures in this chapter. The next chapter (Nr. 12) in this book is entitled *Myology repository*. This chapter presents a clear representation of muscles with proximal and distal attachments, neural innervation, and describes the functions of different body segments: head, neck and trunk, shoulder girdle and upper limbs, pelvis and lower limbs.

Clinical Kinesiology by Nikolino Žura and colleagues is a comprehensive textbook, primarily intended for physiotherapy and occupational therapy students, but also for other medical experts, kinesiologists, and sports coaches. It is a detailed source of information for students and clinicians in everyday practice, and it provides a reliable basis for their further training, while supporting them in providing high-quality healthcare services that contribute to the physical progress of their patients. This book systematically addresses anatomical, biomechanical, and functional aspects of different parts of the body throughout its 14 structured chapters, providing a general understanding of movement, activities, and potential pathological conditions. An important feature of the book is its clear structure and plenty of illustrations and tables that contribute to a better understanding of the complex concepts addressed in the text. The authors provide detailed explanations of basic terms, movements, and body functions, as well as the most common impairments and disabilities, which makes the book a useful tool for practical application in clinical practice. Considering a lack of literature in clinical kinesiology in the Croatian language, the topicality of *Clinical Kinesiology* makes it additionally valuable.