Keywords
Pharmacogenomics, Knowledge, Students, Curricular plan

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Influence of the rs776746 CYP 3A5 gene polymorphism on response to immunosuppressant tacrolimus in patients undergoing liver transplantation: a systematic review

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Background
Hepatic transplantation is a lifesaving therapy that has been increasing over the years in Portugal. Its success is due largely in part to the use of immunosuppressants, like tacrolimus, the first-line immunosuppressant drug for people undergoing liver transplantation. It is a drug with narrow therapeutic window and great inter-individual variability. This variability is explained in part by polymorphisms of the CYP3A5 gene, which encodes the CYP3A5 metabolizing enzyme. The rs776746 polymorphism affects the CYP3A5 gene and gives rise to a non-functional metabolizing enzyme. The CYP3A5 gene is expressed in both the liver and the gut, that is, the metabolism of tacrolimus is affected by the transplanted liver (donor) genotype, as well as by the gut (receptor) genotype. The identification of polymorphisms becomes important especially in the period immediately after transplantation in order to avoid acute rejection of the organ.
Objective
The objective of this work was to review the influence of rs776746 polymorphism of the CYP3A5 gene on pharmacokinetics of tacrolimus.
Methods
A systematic review was conducted through the Pubmed database search, from 2000 to 2017. Articles that meet the study query and the inclusion and exclusion criteria were included for review.
Results
We selected 23 articles that discuss the influence of the rs776746 polymorphism on the pharmacokinetics of tacrolimus. The evidence suggests that individuals with the CYP3A5*3 (non-expressing) allele have a decreased metabolism of tacrolimus and, consequently, lower blood concentrations of the drug compared to individuals carrying the CYP3A5*1 (expressing) allele. The receptor genotype plays a more important role in the first days after transplantation and the donor genotype becomes more important later when the transplanted organ begins to function properly.
Conclusions
This review concluded that regarding hepatic transplantation it is important to identify both the polymorphisms affecting the metabolism of tacrolimus in the donor and recipient genotypes for a more effective dose adjustment, especially in the critical period immediately after transplantation.
Keywords
Transplant, Liver, Polymorphism, rs776746, Tacrolimus, CYP3A5.

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The FITWORK European Project - good practices to develop physical activity programs at work

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Background
Workplace physical demands have widely changed in the last century. Nowadays, most of the jobs in the European Union (EU) have a low overall energy demand. In this context, the FITWORK project aims to develop good practices to support ergonomics and health by implementing physical activity programs, addressed to reduce specific ergonomic risks at the workplace. This 2-year project (2017-2018) is co-funded by the Erasmus+ Programme of the European Union and coordinated by Instituto de Biomecánica of Valencia (IBV) Spain. The partners are the University of Coimbra (UC); Romtens Foundation, Romania; Eindhoven University of Technology (TU/e); the European Network for Workplace Health Promotion (ENWHP) and KOMAG, Poland (http://fitwork.eu/).
Objective
Therefore, the general objective of the project is to promote physical activity at work, awareness of workers and health and safety professionals on the significance of health-enhancing physical activity attending to job demands. To meet this objective, FITWORK will identify good practices in occupational risk prevention through physical activities, including motivational aspects, and best practices for implementing workplace health promotion programs (WHPP).
Methods
The workout programs are being implemented in two different organizations, with experimental group and control group, during six months at the Institute of Mining Technology KOMAG, Poland and INNEX S.R.L, Italy, with the following aims: I) to identify and evaluate the worksites and the professional risks within each organization; II) to adapt the WHP Programme to every worksite: identify the most appropriate exercises to carry out in each worksite and when the workers have to perform them; III) to monitor and collect data using specific instruments and report periodically about the development of the programme; IV) to give recommendations related to good practice and aspects for improving the implementation of the program.
Results
The primary purposes of the analysis of the results are to validate the effect of the designed physical activity programs and to elaborate good practices guidelines in developing and implementing WHP Programs.
Conclusions
There is evidence that behaviour changes are ignited by a complex cocktail of perceived benefits other than health alone, but a lack of evidence still exists on the effectiveness of health promotion activities on productivity, absenteeism or wellbeing. Hence, the desired impact of this European Project is to raise awareness and to engage stakeholders and target groups, sharing solutions and know-how with professional audiences.
Keywords
FITWORK, Job demands, Workplace, Physical activity programs, Erasmus+ Programme.

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Adventitious respiratory sounds to monitor lung function in pulmonary rehabilitation

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Background
Peak expiratory flow (PEF) has been traditionally used to monitor lung function in patients with chronic obstructive pulmonary disease (COPD) before pulmonary rehabilitation (PR) sessions. However, PEF mainly reflects changes in large airways and it is known that COPD primarily targets small airways. Adventitious respiratory sounds (ARS - crackles and/or wheezes), are related to changes within lung morphology and are significantly more frequent in patients with acute exacerbations of COPD. Thus, ARS may be also useful for the routine monitoring of lung function during PR programs.
Objective
This study explored the convergent validity of ARS and PEF in patients with COPD.