Table 2 Reviews

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| **ARTICLES AND AUTHORS** | **YEAR** | **TOPICS COVERED** | **FOCUS ON PROBLEMS** | **INDICATIONS** | **CONCLUSIONS** |
| (18) Juvenile idiopathic arthritis and physical activity: possible inflammatory and immune modulation and tracks for interventions in young populations.Rochette E, Duché P, Merlin E | 2015 | The role of hormones (melatonin and cortisol), immune system (cytokine and interleukin 6), miRNA on biological effects.  | Description of the mechanisms underlying exercise-induced immune and hormonal changes. | Physical activity impacts key mediators of JIA pathogeny, such as cortisol, IL6, calprotectin and miRNA146a. Physical activity simultaneously induces short-term pro-inflammatory and short- and long-term anti-inflammatory systemic effects. This review highlights the beneficial effect of physical exercise in children with JIA and potential effect of exercise on the balance between pro- and anti-inflammatory response. Both pro- and anti-inflammatory effects depend on duration and intensity of exercise, and on training of the subject.  | It is necessary to find the right trade-off between intensity of the exercise, duration of the exercise, level of training, and exercise-program constraints. Indeed, the exercise needs to be feasible for the child who has joint pain or fatigue, but it also needs to be regular. This review does not give indications about measures and modalities of exercise. |
| (26) Physical activity, physical fitness, and exercise therapy in children with juvenile idiopathic arthritis.Houghton K | 2012 | Physical activity, musculoskeletal fitness, bone health, aerobic and anaerobic capacity, exercise, injury risk in children with JIA. | This article reviews the current literature on physical activity, physical fitness, and exercise therapy in children with JIA. | The Canadian Paediatric Society and the Canadian Academy of Sport and Exercise Medicine recommend moderate fitness, flexibility, and strengthening exercises for children with JIA. The American Academy of Pediatrics recommends individual pre-participation evaluation before activity participation. These guidelines are not evidence based.  | It is necessary to study type, amount, duration and frequency of activity and standardized outcome measures. |
| (27) Therapeutic effects of exercise training in patients with pediatric rheumatic disease.Gualano B, Pinto AL, Perondi MB | 2011 | Potential benefits of exercise training in pediatric rheumatic diseases, research and clinical perspectives practical models of pre-participation examinations and contraindications to exercise. | Potential benefits of exercise training in pediatric rheumatic diseases. | Contraindications to physical exercise practice for children and adolescents with pediatric rheumatic disease: fever; anemia; acute renal failure; carditis, serositis, and ischemic response to the treadmill test; Non-controlled arhythmias and arterial hypertension; Severe malnourishment with body weight loss over 35%.The physical training protocols varied in intensity (60%-70% of maximal HR), duration (30-60 minutes), frequency (one to three sessions per week), composition (strength training, aerobic training, flexibility, sports modalities or a combination of them), and follow-up (6-20 weeks). Singh-Grewal show that high and low intensity programs seem to be equally effective and safe. | Considering the enormous therapeutic potential of physical exercise for the treatment of JIA the limited number of studies about it is worth noting. Future RCTs are necessary with solid outcomes. |
| (28) The Utrecht approach to exercise in chronic childhoood conditions: the decade in review.Van Brussel M, van der Net J, Hulzebos E | 2011 | Research on the cardiopulmonary exercise performance of children (and adolescents) with various diseases including juvenile idiopathic arthritis. | The correlation between each sub-group of disease and physical training and disability effects on physical performance.  | Recommendations for Children With JIA: may safely participate in physical activities or sports without risking disease exacerbation; may benefit from a combination of moderate aerobic as well as anaerobic, flexibility, and strengthening training. Contraindications for Children With JIA: Should not participate any physical activity while febrile. Should not participate in physical activities or sports that temporally increase joint pain and/or excessive swelling. Children who present severe osteoporosis should avoid contact sports.  | For future research and clinical application of physical activity, standardization of outcome measures is essential. |
| (29) Physical activity recommendations for children with specific chronic health conditions: juvenile idiopathic arthritis, hemophilia, asthma and cystic fibrosis.Philpott J, Houghton K, Luke  | 2010 | Recommendations for children with specific chronic health conditions. | The present statement reviews the benefits and risks of participation in sport and exercise for children with JIA, hemophilia, asthma and cystic fibrosis.  | Muscle atrophy surrounding active joints and periarticular osteopenia may increase the risk of fracture. Recommendations: Can safely participate in sports without disease exacerbation Should participate in moderate fitness, flexibility and strengthening exercises. Should be encouraged to be as physically active as tolerated. | Most published studies are not randomized, have small numbers and great variation in study design, and use different exercise modalities. The exercise intensity, frequency and duration also vary. |
| (30) Evidence for prescribing exercise as treatment in pediatric rheumatic disease.Gualano B, Sá Pinto AL, | 2010 | The role of physical activity in the treatment of rheumatologic pediatric diseases. | Evidence for prescribing exercise as treatment. | There are 3 RCTs (included in Cochrane in 2008) and two pilot studies. The benefits reported in these studies: improvement in ROM, increased muscle strength, improved clinical symptoms and QoL . | It is important to note that the majority of studies present quasi-experimental designs. |
| (10) The role of exercise therapy in the management of juvenile idiopathic arthritis.Long AR, Rouster-Stevens KA. | 2010 | Effects of Therapeutic exercise as a treatment for JIA. Treatment safety, adherence and patient satisfaction. | The role of exercise therapy in the management of JIA. | This review explains results of Cochrane 2008 and reports Kepplers’ date: exercise induces a decrease in joint count, articular severity index and slight decrease in pain. Moncur et al. suggested a significant decrease in joint count. In contrast Baldwin demonstrated no statistically significant change in joint count or swelling. Oberg e Fisher demonstrated increases in quadriceps and hamstrings strength. A recent case series discussed an aquatic therapy program and included a 2-year-old girl with oligoarticular JIA. The patient showed improvement on quality of life, ROM, muscle strength. | Studies are needed to assess practicality of various programs and long-term effects of exercise in children and adolescents with JIA. |
| (9) Exercise in pediatric rheumatic diseases.Klepper SE | 2008 | Exercise and physical abilities in children with rheumatologic diseases. | The role of exercise therapy in the management of JIA. | A search of the literature revealed nine full text papers describing the efficacy of exercise training in children with JIA. Exercise protocol varied in length (6-20 weeks), frequency (1-3 times a week), duration (30-60 min), intensity (60-70% of maximal heart rate), medium (water, land, or combined) and composition (aerobic training, resistance training, general conditioning, and sport-specific training).  | Long-term participation in programmes may be impractical. Alternate methods of delivering fitness activities, for example exercise videos or sports-based software may be necessary.  |