Pilates and the Effects on Rheumatoid Arthritis

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ABSTRACT

Rheumatoid Arthritis (RA) affects over 53 million people in the U.S. and 1% of the world’s population\(^1\). Unfortunately, 1 in 250 kids is said to have some form of rheumatoid arthritis. While the exploration of exercise on the effects of RA have just begun, this paper supports the idea that exercise helps to reduce inflammation and pain in those suffering from RA. A consistent Pilates exercise program is developed and adhered to using the BASI Pilates principles to help increase stability, strength, awareness, and movement in an active juvenile male with polyarticular arthritis.

Change happens through movement and movement heals. ~ Joseph Pilates
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Arthritis is a familiar term to many. The word “arthritis” comes from the word arthron meaning joint and itis meaning inflammation. But what it actually means, and the structural changes and pain that it can bring to a person’s body, can become life changing. Arthritis presents in two forms: osteoarthritis and rheumatoid arthritis. Osteoarthritis is the breakdown of the joint over time. Osteoarthritis could be caused by an injury like a fracture or break at the joint or tear in the joint structure tissues, like the ligaments or cartilage in the knee. As illustrated in the picture, osteoarthritis can cause the bones to rub together because of the lack of cartilage, or cushion, between the joints. Rheumatoid arthritis (RA) is an autoimmune disease that causes inflammation and eventual damage to joints over time. An autoimmune disease is when the body begins to attack its own healthy tissues, the cells get confused about what to fight off. People with this type of arthritis (RA) also have inflammation around the joint, or around multiple joints, feel unwell, or even have a fever. The inflammation is what causes the pain during a “flare”. The pain and swelling decrease the ability to move because the joints are swollen as seen in the picture below.

![Diagram of joint structures in normal, osteoarthritis, and rheumatoid arthritis conditions.](image-url)
Both categories of arthritis can be very debilitating, but many times RA affects more than one joint at a time and can cause an overall feeling of sickness because of the widespread of inflammation throughout the body. The RA patient may not feel like moving because of the pain and sickness. It is imperative for both osteoarthritic and RA patients to keep moving to help reduce inflammation and to help increase quality of life through supervised movement and group exercise participation. The latest research in exercise science is giving positive results showing that movement is most important in not only healing, but helping to reduce inflammation. Joseph Pilates knew this as he said, “Change happens through movement and movement heals.”
CASE STUDY

Dawson is a 17 year old, very athletic young man. Dawson is 6’2” tall and weighs 155 pounds. He has always been involved with sports such as soccer, basketball, golf, cross country running and track and field. As a high school athlete, Dawson has played basketball as a freshman and sophomore, has run varsity cross country for three years and runs the 800m, 1 mile and/or 2 mile in track and field in the spring. In 2014, Dawson had a select basketball injury where he fell hard into the basketball court first hitting his patella into the court, then rolling fast forward, and sideways, hitting his shoulder, his back and hip. He had a big bone contusion on his femur under the patella that had been dislocated. But more than anything, his back was badly injured. Dawson had x-rays and an MRI scan on his back and his leg at the time. Both scans revealing inflammation. He underwent successful physical therapy for several months for his back and even ended up running for the spring 2015 track and field season. He trained for cross country the summer of 2015. But when the fall 2015 cross country season came around, he was running a great 5k race at a fast pace (5:20-5:30 minute mile pace in the grass) and he began to have pain in his back along with numbness in both of his legs. He came into the finish line, in tremendous pain, bent over laterally to the right. The back specialist ordered films and the MRI revealed inflammation which led to a blood test. The blood test showed rheumatoid markers prompting the family to make the appointment to the pediatric rheumatologist. Since November 2015, Dawson started a McKenzie physical therapy program which neither he, or the physical therapist, did not find very helpful for increasing his range of motion or decreasing his pain as much as they were hoping for. He has also started a biologic (Humira) along with methotrexate, so sometimes Dawson feels nauseated and tired because of his medications. He chooses to always workout. Some days are better than others.
The goal with this Pilates program is to help increase Dawson’s range of motion in his spine, in turn, increasing his ability to move correctly (and hopefully reducing his pain). His pediatric rheumatologist points out that he has an increase in kyphosis which is common in his type of rheumatoid arthritis. We will work on posture and opening up the chest, strengthening the back extensors (longissimus, multifidi and erectors) along with the latissimus dorsi and trapezius. Dawson also has swelling around multiple joints (polyarticular rheumatoid arthritis), so our goal is to help increase his range of motion and help strengthen his ankles, knees as well as his wrists and hands to help support those joints. Dawson will participate in this carefully thought out BASI Pilates block program for 3 days per week for 4 weeks.

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<thead>
<tr>
<th>BLOCK</th>
<th>APPARATUS</th>
<th>EXERCISE</th>
<th>GOAL/RESULT</th>
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<tbody>
<tr>
<td>Foot Work</td>
<td>Reformer</td>
<td>Parallel heels, Parallel toes, V-toes, Wide V-Heels, Wide V-Toes, Calf Raises, Prancing, Single Leg Heel, Single Leg Toes</td>
<td>Tried on Cadillac, too painful on back, not flexible enough. Will try in the future *</td>
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<tr>
<td>Abdominals</td>
<td>Reformer</td>
<td>Hundred Prep, Hundred, Coordination</td>
<td>Is ok, has a strong core</td>
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<td></td>
<td>Cadillac</td>
<td>Weeks 3&amp;4 Roll-up w/RUBar, Mini Roll-ups, Mini Roll-ups obliques, Roll-up top loaded</td>
<td>Roll-up w/RUBar feels good on back</td>
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<td><strong>Hip Work</strong></td>
<td><strong>Reformer Cadillac wk 3&amp;4</strong></td>
<td>Frog, Circles (down, up), Openings Added Extended Frog &amp; Extended Frog Reverse in <strong>Week 3</strong></td>
<td>Was shakey on Frog the first week, then muscle memory took over. Has trouble with pelvis stability.</td>
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<td><strong>Spinal Articulation</strong></td>
<td><strong>Reformer</strong></td>
<td>Bottom lift, Bottom lift w/extensions, Short Spine Added Long Spine week 4</td>
<td>Increasingly better control throughout the weeks; more pelvic stability, so tried Long Spine; focused on relaxing neck</td>
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<td><strong>Stretches</strong></td>
<td><strong>Reformer</strong></td>
<td>Standing Lunge</td>
<td>Focus on an upright spine, shoulder blades down, very tight hip flexors!</td>
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<td><strong>Full Body Integration</strong></td>
<td><strong>Reformer</strong></td>
<td>Down Stretch, Elephant, Long Stretch <strong>Weeks 3&amp;4</strong> Upstretch 1, Upstretch 2, Long Stretch, Upstretch 3</td>
<td>Had a hard time relaxing shoulders at first—and hamstrings. Still a work in progress as far as flexibility, but got the strength.</td>
</tr>
<tr>
<td><strong>Arm Work</strong></td>
<td><strong>Reformer Cadillac</strong></td>
<td>Arm Supine Series-Week 1 Arm Kneeling Series – Week 2 <strong>Weeks 3&amp;4</strong> Arm Standing Series &amp; Push Through Group</td>
<td>As he progressed, saw the need for more ROM within the shoulder joint and more functional work</td>
</tr>
<tr>
<td><strong>Full Body Integration 2</strong></td>
<td><strong>Cadillac</strong></td>
<td>Sitting Forward (push through group) Thigh Stretch w/RUBAR</td>
<td>To work on sitting up and posture which is so difficult to do (doesn’t like this exercise). Thigh Stretch to help stretch the knees for the enteritis he has.</td>
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</table>
| Leg Work | Wunda Chair | Backward Step Down, Hamstring Curl  
Week 3&4  
Added Hip Opener | For balance, and hamstring curl to help with the pelvis stability (& awareness) while working the hamstrings. Hip Opener for ROM. |
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<tr>
<td>Lateral Flexion/Rotation</td>
<td>Wunda Chair</td>
<td>Side Pike, Side Stretch</td>
<td>Core Strength and stretching</td>
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| Extension | Wunda Chair | Swan on Floor  
Swan Basic | Helps with his back extensors, stretches his chest |
CONCLUSION

Dawson looked forward to his Pilates sessions every day. It helped that he has Pilates equipment in his home and they he is a most compliant athlete that is determined to perform better and feel better. After giving up basketball this past year, it has been difficult for him to realize that rheumatoid arthritis may really change his life and his lifestyle. At the young age of 17, that is a harsh reality. Not feeling well, changing your everyday life around what your body may, or may not allow you to do, can definitely take a toll on anyone. It is important that his doctor is telling him that physical activity is important for the body and that it actually helps the body rather than hinders it. Of course, the right type of physical activity is important. In Dawson’s case, playing a contact sport was hurting him. But, he may be able to keep running longer if he continues to take care of his body through a supportive Pilates program such as the one above that follows BASI’s Block Program.

Starting out with some of the fundamental exercises, like the warmup on the mat, was important for Dawson’s success. It showed him that this program was something that he could do and that there was a progression. Athletes enjoy progression. He really likes the Reformer and the feel of it on his body. We tried some footwork on the Cadillac and because of the lack of flexibility in his back and hamstrings, it didn’t feel good. Footwork on the Reformer felt good and we continued with the footwork on the Reformer throughout all of his sessions. We may be able to revisit footwork on the Cadillac in the future, and a goal that we can work toward if his back allows for it.
There were times that Dawson did not feel well for an entire workout, so we had to split the workout into two sessions. During these “make up sessions”, we warmed up and chose some exercises from each block that he enjoyed the next time and caught up where we left off. This early stage in Dawson’s diagnosis, I wanted to make sure that he realized that there is an option to exercise for him. He needed to know that he can find a challenge in Pilates, and something that feels good too. He was able to increase his resistance during the arm work, and also increase his range of motion for his shoulders. This muscle increase is important for a teenage boy. During the leg work block, focusing on stability for his pelvis was vital and made him realize where he was weak. He had tremendous gains here and reports that his running feels better because his pelvis and sacroiliac joints do not feel so unstable. The swan on floor and swan basic were both quite challenging as the exaggerated kyphosis of his spine makes this difficult. He learned how to control the resistance, open up the chest and shoulders. This will take a while to achieve. After his sessions, Dawson was able to move better, his range of motion had increased. Unfortunately, when he came back for the next session a couple of days later, his range of motion would not be the same as the end of a session. Maybe it will change over a longer period of time. In a systematic review by O'Dwyer et al, they reviewed Pilates with McKenzie therapy for the spine was a successful program for those suffering from spondyloarthritis, inflammation and/or lack of movement within the spine.\(^7\) This combination could be an idea for Dawson’s exercise therapy in the future.

Dawson continues to take Pilates and practice Pilates on his own. He realizes the benefits that these movements have on his body, how he feels better the day of, and the day after he practices Pilates.
REFERENCES

Websites


Articles


Book