

3<sup>rd</sup> International Conference on

# SPORTS MEDICINE AND FITNESS

October 05-06, 2017 Barcelona, Spain

## Aerobic but not resistance exercise can induce inflammatory pathways via toll-like 2 and 4: a systematic review

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The relationship between toll-like receptors 2 and 4 (TLR2 and TLR4) and the production of local and systemic cytokines in response to physical exercise has been poorly explored, and studies of a connection have produced conflicting results. Objective: To evaluate the extent to which TLR2 and TLR4 expression and signaling are linked to acute and chronic exercise outcomes. Methods: PubMed databases were consulted. This systematic review selected 39 articles, 26 involving humans and 13 based on rodents. Results: In acute resistance exercise studies, 75% showed a decrease and 25% did not find differences in TLR4 or TLR2 expression. For chronic resistance exercise studies, 67% found a reduction of expression and 33% did not show any difference. Both types of studies showed reductions in proinflammatory cytokines. In acute aerobic exercise studies, 40% revealed a decline, 7% did not show a difference, 40% showed an increase and 13% did not directly test the expression of the receptors. For chronic aerobic exercise, 58% of the studies showed a reduction in expression, 17% did not show a difference, and 25% found an increase. Among the studies that focused on combined exercise, 50% found a decline and 50% did not show a difference. Conclusions: A majority of the articles (54%) report a decline in TLR4 and TLR2 expression. However, aerobic exercise has the potential to evoke inflammatory responses by influencing these receptor pathways and acute sessions provided a greater inflammatory condition (40%) than regular sessions (25%).

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