Human Interventional Orthopedic Studies Utilizing Adipose-Derived Lipoaspirate (2011-2019)

There is currently a growing body of research supporting the use of adipose derived mesenchymal stem cells (AD-MSCs) to treat orthopedic conditions. Here is a list of all significant publications to date highlighting human clinical applications of AD-MSCs. Each shape represents a research study and is hyperlinked to the abstract in the U.S. National Library of Medicine or the full text article. The main author is listed, and the shape and color of each correspond to the area treated and lipoaspirate preparation process to extract AD-MSCs, respectively.

N = 5,642

- **MFAT** — Lipoaspirate samples micro-fractured via mechanical and non-enzymatic processes
- **SVF** — Lipoaspirate samples digested using enzymatic reaction and reconstituted without the use of cultured media
- **ASC** — Lipoaspirate samples grown in culture media with or without enzymatic digestion

2011
- Pak

2012
- Koh and Choi

2013
- Koh et al.
- Kim et al.
- Pak et al.
- Pak et al.

2014
- Centeno et al.
- Koh et al.
- Pak et al.
- Bui et al.
- Koh et al.
- Kim et al.
- Jo et al.

2015
- Oliver et al.
- Striano et al.
- Fodor Paulseth
- Gibbs et al.
- Garza et al.
- Koh et al.
- Kim et al.
- Kim et al.
- Kim et al.

2016
- Frances-hini et al.
- Grossi et al.
- Pak et al.
- Al-Salahat et al.
- Koh et al.
- Kim and Koh
- Kim et al.
- Kim et al.
- Pers et al.

2017
- Hudetz etl al.
- Russo et al.
- Striano et al.
- Adriani et al.
- Michalek et al.
- Yokota et al.
- Pintat et al.
- Pak et al.
- Nguyen et al.
- Kim et al.
- Bansal et al.
- Freitag et al.
- Jo et al.

2018
- Cattaneo et al.
- Panchal et al.
- Striano et al.
- Peretti et al.
- Arthurs et al.
- Jones et al.
- Usuelli et al.
- Kim et al.
- Song et al.
- Spasovski et al.

2019
- Panni et al.
- Cherian et al.
- Londardi et al.
- Hudetz et al.
- Barfod and Blond
- Mautner et al.
- Michalek et al.
- Tran et al.
- Hong et al.
- Kim et al.
- Yokota et al.
- Lee et al.
- Freitag et al.
- Freitag et al.
- Lu et al.
- Jo et al.

2020
- Garza et al.

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