

**【Methods】** Eleven healthy adult males were subjected to this study. Normal breathing (NB) was measured in four pelvic tilt positions (0°, 10°, 20°, and maximum). Respiratory function data were collected using an exhaled gas analyzer. The anterior-posterior diameter of the inferior vena cava (IVC) at rest and during a sniff action was measured using an echo system.

**【Results】** Inspiration volume during NB tended to be lower in the maximum posterior pelvic tilt position than in the other postures. The maximum posterior pelvic tilt position decreased the maximum diameter of the IVC and the amount of change in the diameter during a sniff action.

**【Discussion】** These results suggest that the posterior pelvic tilt sitting decreases inspiration volume and circulatory volume in the IVC during inspiration. Therapists should help patients sit with the pelvis straight in EM for stable respiration and circulation.

## 5-5.

### The impact of protein stabilizer octanoic acid in culture medium on murine embryo development

(大学病院：産科婦人科学分野)

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**【Objective】** All culture media for assisted reproductive technologies (ART) contain a high concentration (600 ~1,200 μM) of medium chain fatty acid, octanoic acid (OA), which acts as a stabilizer of human serum albumin during viral heat inactivation. We reported that OA is metabolized in murine embryos, while others have reported that a high concentration of OA has deleterious effects on murine embryo development. To understand its precise effects, we examined the impact of OA on mu-

rine embryo development/gene expression and on long-term growth after birth.

**【Methods】** Ova prepared from inbred 18 C57BL/6N Crl female mice were in-vitro fertilized with sperm from the same strain, and cultured in an OA-free recombinant albumin/KSOMaa culture medium supplemented with 0, 400, 800, or 1,200 μM OA. After 96 h, embryos were transferred to pseudopregnant female mice, and pups were raised up to 1 year. Gene expression analyses were performed for part of the embryos.

**【Results】** Blastocyst development rate at 72 and 96 h and the number of successful implantation and delivery significantly decreased with increasing OA concentrations ( $p < 0.05$ ). Body weight gain in male mice also significantly decreased as embryonic exposure to OA concentration was increased ( $p < 0.05$ ). Gene expression analysis revealed that 438 genes were significantly up- or down-regulated in 96 h embryonic exposure of OA (1,200 μM), including certain imprinted genes.

**【Conclusion】** High concentration exposure of OA may cause deleterious effects not only on embryo development but also on post-birth development. This latter effect might be derived from epigenetic changes in pre-embryo and raises concerns regarding human ART.

## 5-6.

### 妊娠時の間欠的低酸素曝露が成長期の仔ラット骨格筋に与える影響

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DoHaD (Developmental Origins of Health and Disease) 説とは胎児期や発達の環境が将来の健康や生活習慣病など特定の病気の発症リスクに関連するというものであり、近年、妊娠動物モデルを用いた基礎研究やエピゲノム研究が盛んに行われている。なかでも妊娠時には閉塞性睡眠時無呼吸が好発し、母体の低酸素状態が胎児に与える影響が懸念されている。我々は妊娠ラットを間欠的低酸素 (IH) 曝露下で飼育し、生まれた仔ラットを通常酸素下で成