Comment:
This study was to test whether PEMF could modulate the osteogenic differentiation in AECs. They found that PEMF stimulation, or osteo-induction medium alone induced osteogenic differentiation of AECs, evidenced by expression of osteoblast specific genes and proteins including alkaline phosphatase and osteocalcin. Furthermore, a combination of PEMF and osteogenic-inducing medium had synergic effects on osteogenic differentiation. PEMF also enhanced the osteo-induction medium induced gene expressions of BMP-2, #-catenin, Nrf2, Keap1, integrin#1. They conclude that combined application of physical and biochemical stimuli are synergistic for the osteogenic differentiation of AECs. It might be a novel approach in the bone regenerative medicine.

The study of the effect of PEMF alone and combination effect of PEMF and osteo-induction on osteogenesis in AECs is novel. For exact expressing the present finding, I suggest to do the following revision:

Major Compulsory Revisions:
1. Abstract: should be changed to more fit the finding in this study. In Results, to state the experiment results but not express uncertain speculation. The suggestion can be shown in the conclusion. In Conclusion, it should indicate more specific suggestion, like “combined application of PEMF and osteoinduction..” instead of “combined application of physical and biochemical stimuli..”

2. Results: The figure numbering should follow the statement in this section or change the presentation sequence to fit the fig No.

3. Figures:
   Fig.2: 1) The quality need to be improved.

   2) It seems like they use control in each time point as 1 to normalize the data. By this way, it lost the information of the expression profile in control group during the culture days. I suggest to use the control day 3 (or earlier) as 1 to calculate the relative folds.

   3) According to the data shown in Fig2, it seems like the most effective timing is within 7 days. I suggest to look at the gene expression change closely during 1-7 days that will make the data more convincing.
Fig3: The 3a and 3b is not consistent. Suggest to show the more representative image.

Discussion:
1. P8: "and protein production of osteoblast markers ALP and OC..", The data is ALP activity but not protein production. Should be clarified.
2. P8: They need indicate more about the previous studies regarding the different module with different effects.
3. The following points need to be discussed: 1) BMP2 and Wnt pathway are very powerful, which could subsequent affect other osteogenic genes; 2) The time point correlation with the expression profile of the genes presented in this study.
4. It should add more information regarding integrin (alfa, beta complex) sensing the physical and chemical signal.
5. This paper only searched the expression changes of certain genes those involved in osteogenesis, as well as some related to ROS and integrin ECM receptor. Authors should state the limitation of this paper.

Minor Essential Revisions
1. In abstract: "markers. The signal transduction of osteogenic was further investigated." Suggest to change to “osteogenesis”; “osteogenic-inducing media” change to “osteo-induction medium”.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.