The main corrections in the paper and the responds to the editor's and reviewers' comments are as follows:

Editor's comments: Please check and confirm that there are no repeated references! Please verify that the references are cited by Roman numerals in brackets and superscripted in the text and that the numbering order is correct. There should be no space between the bracket and the preceding word or the following punctuation. When references in the text and tables are cited with author name(s), it is necessary to manually verify that the name(s) is consistent with the first author's surname in the corresponding reference list. Please don't include abbreviations in the title of the figure/table. Please explain all the abbreviations in the figure/table legends as full name (abbreviation). Please explain all the abbreviations of each figure/table under each piece of figure/table legends. Please don't include any *, #, ...in your manuscript; Please use superscript numbers for illustration; and for statistical significance, please use superscript letters.

Response: Thanks a lot for your comment. We have checked that there are no repeated references. We have verified that the references are cited by Roman numerals in brackets and superscripted in the text and that the numbering order is correct. There is no space between the bracket and the preceding word or the following punctuation. We have revised some mistakes according to your suggestion for first author's surname cited in the text (Page 6 Line 28; Page 7 Line 26; Page 8 Line 15; Page 10 Line 2; already highlighted in the text) and manually verified that the name(s) is consistent with the first author's surname in the corresponding reference list when references in the text and tables are cited with author name(s). We have revised the table according to your suggestion. There is no * and # in our manuscript.

Reviewers' comments:

Reviewer #1

1. Please add the reference number at the end of each sentence so the reader can search for the article if interested.

Response: Thanks a lot for your comment. We have added references according to the requirements of the journal when we quote the content of others' articles in our manuscript. According to your suggestion, we have read through the full text and added references to the end of sentences as many as possible, especially in the Introduction section. Please see the manuscript for details.

Reviewer #2

2. This review has summarized several stem cells which may have the ability for regeneration of the skeletal system, and highlighted SSCs, MSCs and Circulating progenitor cells. In introduction, it introduced the physiological properties of bone and indicated the character of stem cells in bone repair process. It illustrated the different differentiation capacity of different stem cells include totipotent, pluripotent, multipotent and unipotent. In body part of the passage, it depicted several cells which are contribute to bone regeneration, such as OCR stem cells, pre-BCSP and BCSP, PTHrP-positive chondrocytes, PCs, BMSCs, BMMSCs, ADSCs, EPCs. Their functions were generally divided into two part, secretion of nutritional or immunomodulatory factors and direct effect on the formation of the bone callus, although there are no clear line of demarcation among those cells. In Circulating progenitor cells part, page9 line 30, "hematopoietic cells ..... do not contribute to osteogenesis in fracture healing or heterotopic ossification" seems too absolute in expression, it had said in introduction that "hematopoietic stem cells (HSCs)[17], which are the source for all kinds of blood cells, and bone marrow mesenchymal stem cells (BMMSCs), also known as the bone marrow stromal cells (BMSCs)[18]" ,it may have indirect contribution to fracture healing or heterotopic ossification.

In page10 line 16, “circulating osteogenic connective tissue progenitors (GFP+ cells) ”have been confirmed “contribute to osteogenic differentiation in the early stage of fracture healing”,but it have not indicated whether these progenitors are some or several progenitors mentioned above. In conclusion part, it has depicted some prospect of clinical application.BMMSCs and ADSCs are easily access for regenerative medicine, SSCs and/or BMMSCs have positive differential and therapeutic potentials. Some single plural form of words should be careful ,like the page1 line3 and line4 ”tissue” should be “tissues”. It is a good writing but relatively simple and discussed not so deeply. For a publishable manuscript, it is suggested to add the more information on such as the limitation and/or disadvantage.

2.1 In Circulating progenitor cells part, page9 line 30, “hematopoietic cells ..... do not contribute to osteogenesis in fracture healing or heterotopic ossification” seems too absolute in expression, it had said in introduction that “hematopoietic stem cells (HSCs)[17], which are the source for all kinds of blood cells, and bone marrow mesenchymal stem cells (BMMSCs), also known as the bone marrow stromal cells (BMSCs)[18]” ,it may have indirect contribution to fracture healing or heterotopic ossification.

Response: Thanks a lot for your comments. Your suggestions are very helpful for revising and improving our manuscript. We agree with your views very much. We really do not express this sentence precisely enough. In order to express accurately, we read the literature again and revised this sentence. As it is shown

Although hematopoietic cells are developmentally derived from the mesoderm in a manner similar to osteoblasts, they have no direct role in fracture healing or heterotopic ossification.

2.2 In page10 line 16, “circulating osteogenic connective tissue progenitors (GFP+ cells) ” have been confirmed “contribute to osteogenic differentiation in

the early stage of fracture healing", but it have not indicated whether these progenitors are some or several progenitors mentioned above.

Response: We read the article again carefully. The authors used a transgenic GFP mice in the research. The GFP+ mice harbor a transgene consisting of enhanced GFP (EGFP) cDNA under the control of a chicken β-actin promoter and a cytomegalovirus enhancer. EGFP is expressed in all cells of this transgenic mouse line. Parabiotic animals were formed by surgically conjoining transgenic mice constitutively expressing GFP in no erythroid tissue and syngeneic wild-type mice. The author has no precise definition of circulating osteogenic connective tissue progenitors, so it is not certain whether these progenitors are the same as some of the cells mentioned above.

2.3 Some single plural form of words should be careful, like the page1 line3 and line4 "tissue" should be "tissues".

Response: According to your comment, we have revised single plural form in the manuscript which were highlighted. As it is shown

The bones in our body are living tissues. They are composed of two types of tissues: 1) the cortical (compact) bone as a hard outer layer, which is dense, strong, and tough; and 2) the trabecular (cancellous) bone as a spongy inner layer.

We have checked the full text again and revised another three single plural form. Please see the manuscript for details.

2.4 It is a good writing but relatively simple and discussed not so deeply. For a publishable manuscript, it is suggested to add the more information on such as the limitation and/or disadvantage.

Response: According to your suggestions, we have added a "Limitation and disadvantage" section. As it is shown

Limitation and disadvantage

In recent years, significant progress has been made in the study of SSCs.

However, there is still a distance between basic research and clinical translation. The main reason is that there is currently no precise definition of SSCs, and they are relatively difficult to obtain. SSCs in most researches are obtained from growth plates, which is difficult and impractical for clinical translation. Although there is a lot of researches on circulating progenitor cells, there is also a lack of a unified definition of circulating progenitor cells. Most of the researches do not focus on a unique class of cells but a group of mixed cells. Subsequent research needs to accurately classify circulating progenitor cells and study the specific functions of each group. Most of the circulating progenitor cells can be more easily obtained through the blood system than other SSCs, and its clinical translation has broad application prospects.

We recorded the relevant clinical trials from clinicaltrials.gov, however, it is still not comprehensive enough. In the future, we should search for the clinical research registration websites from different countries, and pay attention to the progress of the trails on time. At present, MSCs are the most widely used in clinical trials, and in the future scientists should expand clinical research on different types of skeletal stem cells.