## Supplementary material Supplementary material 1 Retrieval strategy. PubMed

#1 ((((Mesenchymal Stromal Cell\*[Title/Abstract]) OR (Mesenchymal Stem
Cell\*[Title/Abstract])) OR (Mesenchymal Progenitor Cell\*[Title/Abstract])) OR (Bone Marrow
Stromal Cell\*[Title/Abstract])) OR (Stem cell\*[Title/Abstract])
#2 (((((Osteoarthritis[MeSH Terms]) OR (Osteoarthritides[Title/Abstract])) OR
(Osteoarthrosis[Title/Abstract])) OR (Osteoarthroses[Title/Abstract])) OR (knee
osteoarthritis[Title/Abstract])) OR (knee osteoarthrosis[Title/Abstract])) OR
(KOA[Title/Abstract])) OR (knee osteoarthrosis[Title/Abstract])) OR
(KOA[Title/Abstract]))
#3 (((((((platelet-rich plasma[MeSH Terms]) OR (PRP[Title/Abstract])) OR (plasma rich in
growth factors[Title/Abstract])) OR (platelet derived growth factor[Title/Abstract])) OR (platelet

growth factors[Title/Abstract])) OR (platelet derived growth factor[Title/Abstract])) OR (platelet derived[Title/Abstract])) OR (platelet gel[Title/Abstract])) OR (platelet lysate[Title/Abstract])) OR (platelet rich plasma[Title/Abstract]) #4 #1 AND #2 AND #3

EMBASE

#1 'mesenchymal stromal cell\*':ab,ti OR 'mesenchymal stem cell\*':ab,ti OR 'mesenchymal progenitor cell\*':ab,ti OR 'bone marrow stromal cell\*':ab,ti

#2 osteoarthritis:ab,ti OR osteoarthritides:ab,ti OR osteoarthrosis:ab,ti OR osteoarthroses:ab,ti OR 'knee osteoarthritis':ab,ti OR 'knee osteoarthrosis':ab,ti OR koa:ab,ti

#3 'platelet-rich plasma':ab,ti OR prp:ab,ti OR 'plasma rich in growth factors':ab,ti OR 'platelet derived growth factor':ab,ti OR 'platelet derived':ab,ti OR 'platelet gel':ab,ti OR 'platelet lysate':ab,ti

#4 #1 AND #2 AND #3

#### Cochrane Library

#1 (knee osteoarthritis):ti,ab,kw OR (knee osteoarthritides):ti,ab,kw OR (osteoarthritis of Knee):ti,ab,kw OR (Osteoarthritis):ti,ab,kw OR (KOA):ti,ab,kw

#2 (platelet-rich plasma):ti,ab,kw OR (plasma rich in growth factors):ti,ab,kw OR (PRP):ti,ab,kw OR (platelet gel):ti,ab,kw OR (platelet lysate):ti,ab,kw

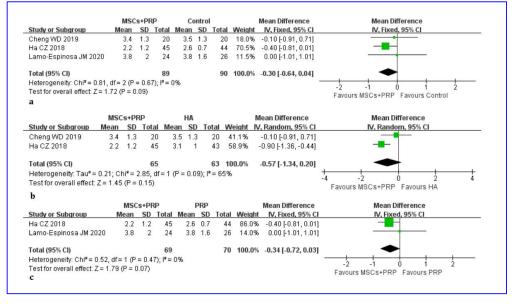
#3 (platelet-rich plasma):ti,ab,kw OR (plasma rich in growth factors):ti,ab,kw OR (PRP):ti,ab,kw OR (platelet gel):ti,ab,kw OR (platelet lysate):ti,ab,kw

#4 #1 AND #2 AND #3

CNKI

(TKA='干细胞') AND (TKA='富血小板血浆' OR TKA='血小板凝胶' OR TKA='血小板') AND (TKA='膝骨关节炎' OR TKA='关节炎' OR TKA='膝关节炎')

## **Supplementary Figure 1**



Supplementary Figure 1 Forest plot of VAS score 3 months after treatment : (a) MSCs+PRP *vs* control group (PRP and HA in control group); (b) MSCs+PRP *vs* HA; (c) MSCs+PRP *vs* PRP.

#### **Supplementary Figure 2**

	MS	SCs+P	Rb.	Co	ntrol			Mean Difference	Mean Difference
Study or Subgroup	Mear	n SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% Cl	IV, Fixed, 95% CI
Cheng WD 2019	3.9	3 1.4	20	4.4	1.4	20	14.0%	-0.50 [-1.37, 0.37]	
Ha CZ 2018	2.3	2 1.1	45	2.6	0.6	44	78.3%	-0.40 [-0.77, -0.03]	
Lamo-Espinosa JM 2020	3.3	3 2.2	24	3.5	2	26	7.7%	-0.20 [-1.37, 0.97]	· · · · · · · · · · · · · · · · · · ·
Total (95% CI)			89			90	100.0%	-0.40 [-0.72, -0.07]	•
Heterogeneity: Chi <sup>2</sup> = 0.16,	df= 2 (	P = 0.9	2); I <sup>2</sup> = 0	)%					
Test for overall effect: Z = 2	.41 (P=	0.02)							Favours MSCs+PRP Favours control
a									
	MSCs	PRP		HA				Mean Difference	Mean Difference
Study or Subgroup Me	ean S	D To	tal Me	an SI	) To	tal V	Veight N	V, Random, 95% Cl	IV, Random, 95% Cl
Cheng WD 2019	3.9 1	.4	20	4.4 1.4	4	20	38.6%	-0.50 [-1.37, 0.37]	
Ha CZ 2018	2.2 1	.1	45	3.5	1	43	61.4%	-1.30 [-1.74, -0.86]	
Total (95% CI)			65			63 1	00.0%	-0.99 [-1.75, -0.23]	•
Heterogeneity: Tau <sup>2</sup> = 0.2	0: Chi <sup>z</sup>	= 2.60	df = 1	(P = 0.1)	1): P	= 629	6	-	<u> </u>
Test for overall effect: Z =									-2 -1 0 1 2 Favours MSCs+PRP Favours HA
b									
	M	SCs+P	RP		PRP			Mean Difference	Mean Difference
Study or Subgroup	Mea	n SD	Total	Mean	SD	Tota	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% Cl
Ha CZ 2018	2.	2 1.1	45	2.6	0.6	44	91.0%	-0.40 [-0.77, -0.03]	
Lamo-Espinosa JM 2020	3.	3 2.2	24	3.5	2	28	9.0%	-0.20 [-1.37, 0.97]	
Total (95% CI)			69			70	100.0%	-0.38 [-0.73, -0.03]	•
Heterogeneity: Chi <sup>2</sup> = 0.10,	df = 1	(P = 0.	75); I=	0%					-2 -1 0 1 2
Test for overall effect: Z = 2	.14 (P =	= 0.03)							-2 -1 U 1 2 Favours MSCs+PRP Favours PRP
с									Favours MSUS+PRP Favours PRP

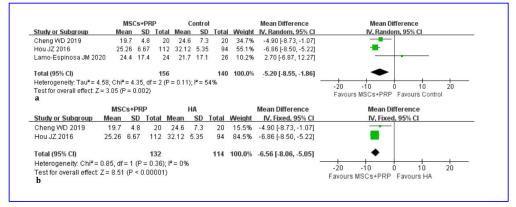
Supplementary Figure 2 Forest plot of VAS score 6 months after treatment : (a) MSCs+PRP *vs* control group (PRP and HA in control group); (b) MSCs+PRP *vs* HA; (c) MSCs+PRP *vs* PRP.

### **Supplementary Figure 3**

MSCs	+PR	р		HA			Mean Difference	Mean Difference
ean	SD	Total	Mean	SD	Tota	Weigh	t IV, Random, 95% CI	IV, Random, 95% Cl
4.3	1.2	20	4.9	1.4	20	45.0	6 -0.60 [-1.41, 0.21]	
2.2	1.1	45	3.9	1	43	55.0	6 -1.70 [-2.14, -1.26]	
		65			63	100.0	6 -1.20 [-2.28, -0.13]	-
19; Chi	<sup>2</sup> = 5	.50, df	= 1 (P =	= 0.02	2);   <sup>2</sup> =	32%		
2.20 (	(P = (	0.03)						-4 -2 U 2 4 Favours MSCs+PRP Favours HA
N.	ASCs	+PRP		Р	RP		Mean Difference	Mean Difference
Me	an	SD T	otal M	ean	SD T	otal W	ight IV, Fixed, 95% C	I IV, Fixed, 95% CI
	2.2	1.1	45	2.7	0.6	44 9	.7% -0.50 [-0.87, -0.13	g - <mark>-</mark> -
	3.5	2.5	24	4.5	2.2	26	.3% -1.00 [-2.31, 0.31	1
			69			70 10	0.0% -0.54 [-0.89, -0.18	1 🔶
2, df = 1	(P=	0.47);	I <sup>2</sup> = 0%					
2.97 (F	P = 0.	003)						-2 -1 U 1 2 Favours MSCs+PRP Favours PRP
								ravouis Moostrikr ravouis rkr
	ean 4.3 2.2 49; Ch 2.20 1 <u>Me</u> 2, df = 1	lean         SD           4.3         1.2           2.2         1.1           49; Chi² = 5         2.20 (P = 0)           MSCs         Mean           2.2         3.5           2, df = 1 (P =         (P = 1)	4.3 1.2 20 2.2 1.1 45 19; Chi≇ = 5.50, df 2.20 (P = 0.03) MSCs + PRP Mean SD T 2.2 1.1 3.5 2.5	ean         SD         Total         Mean           4.3         1.2         20         4.9           2.2         1.1         45         3.9           65         65         65         65           49; Chi <sup>2</sup> = 5.50, df = 1 (P = 2.20 (P = 0.03)         9         9           MSCs+PRP         Mean         SD         Total         M           2.2         1.1         45         3.5         2.5         24           9, df = 1 (P = 0.47); I <sup>2</sup> = 0%         69         9         49         46 = 0.47); I <sup>2</sup> = 0%         69	team         SD         Total         Mean         SD           4.3         1.2         20         4.9         1.4           2.2         1.1         45         3.9         1           45         5.50, df = 1         (P = 0.02)         0.02           49; Chi <sup>2</sup> = 5.50, df = 1         (P = 0.03)         0.03         0.03           MSCs+PRP         P           Mean         SD         Total         Mean           2.2         1.1         45         2.7         3.5         2.5         24         4.5           9; df = 1         (P = 0.47); P = 0%         69         0.45         0.47         0.45         0.7	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	ean         SD         Total         Mean         SD         Total         Weigh           4.3         1.2         20         4.9         1.4         20         45.0%           2.2         1.1         45         3.9         1         43         55.0%           65         63         100.0%         1         43         55.0%           49; Chi <sup>2</sup> = 5.50, df = 1 (P = 0.02); P = 82%         2.20 (P = 0.03)         9         1         43         55.0%           MSCs+PRP         PRP	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

Supplementary Figure 3 Forest plot of VAS score 12 months after treatment : (b) MSCs+PRP vs HA; (c) MSCs+PRP vs PRP.

### Supplementary Figure 4



Supplementary Figure 4 Forest plot of WOMAC score 3 months after treatment : (a)

MSCs+PRP vs control group (PRP and HA in control group); (b) MSCs+PRP vs HA.

## **Supplementary Figure 5**

	M	SCs+	PRP		Contr	ol		Mean Difference	Mean Difference
Study or Subgroup	Mea	n S	SD Tot	tal Mea	an S	D Tota	Weight	IV, Random, 95% CI	IV, Random, 95% Cl
Cheng WD 2019	21	4 5	5.3	20 27	.8 8.	3 20	35.0%	-6.40 [-10.72, -2.08]	
Hou JZ 2016	22.4	4 5.1	19 1	12 33.	34 6.3	2 94	46.8%	-10.90 [-12.50, -9.30]	•
Lamo-Espinosa JM 2020	21	3 16	6.6	24	23 1	5 26	18.2%	-1.70 [-10.49, 7.09]	
Total (95% CI)			1	56		140	100.0%	-7.65 [-12.38, -2.92]	•
Heterogeneity: Tau <sup>2</sup> = 11.	78; Chi <sup>2</sup>	= 7.2	9, df = 1	2 (P = 0.	.03); I <sup>2</sup> :	= 73%			-20 -10 0 10 20
Test for overall effect: Z = 3.17 (P = 0.002)							Favours MSCs+PRP Favours Control		
a									Favours mods+FRF Favours control
	MSCs	+PRF	P		HA			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI	IV, Random, 95% CI
Cheng WD 2019	21.4	5.3	20	27.8	8.3	20	39.7%	-6.40 [-10.72, -2.08]	
Hou JZ 2016	22.44	5.19	112	33.34	6.32	94	60.3%	-10.90 [-12.50, -9.30]	
Total (95% CI)			132			114	100.0%	-9.11 [-13.43, -4.80]	•
Heterogeneity: Tau <sup>2</sup> = 7	37: Chi	<sup>2</sup> = 3.6	67. df=	= 1 (P =	0.06):	r = 739	6		
									-20 -10 0 10 20
Test for overall effect: Z									Favours MSCs+PRP Favours HA

Supplementary Figure 5 Forest plot of WOMAC score 6 months after treatment : (a)

# MSCs+PRP vs control group (PRP and HA in control group); (b) MSCs+PRP vs HA.

## **Supplementary Figure 6**

	MSC	Control			Mean Difference		Mean Difference						
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI		IV, F	ixed, 95	% CI	
Bastos R 2018	68.2	24.7	9	50.3	26.6	9	35.9%	17.90 [-5.82, 41.62]			-		-
Bastos R 2019	59.9	24.8	14	54.2	24.7	16	64.1%	5.70 [-12.05, 23.45]		-			
Total (95% CI)			23			25	100.0%	10.08 [-4.13, 24.30]					
Heterogeneity: Chi2 =	0.65, df	= 1 (P	= 0.42)	$  ^2 = 0\%$	6			-	1	1	-	+	-
Test for overall effect: Z = 1.39 (P = 0.16)									-50 Favou	-25 Irs MSCs+P	U RP Fa	25 vours MSC	50 s

Supplementary Figure 6 Forest plot of KOOS 12 months after treatment : MSCs+PRP

vs MSCs.

## **Supplementary Figure 7**

	MSCs+	PRP	MSC	S		Risk Ratio	Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	M-H, Fixed, 95% CI
Bastos R 2018	3	9	7	9	69.5%	0.43 [0.16, 1.15]	
Ha CZ 2018	3	45	3	43	30.5%	0.96 [0.20, 4.48]	
Total (95% CI)		54		52	100.0%	0.59 [0.25, 1.36]	-
Total events	6		10				
Heterogeneity: Chi <sup>2</sup> =	0.78, df=	1 (P = 0)	0.38); I <sup>2</sup> =	0%			0.05 0.2 1 5 20
Test for overall effect	Z=1.24 (	P = 0.2	2)				Favours MSCs+PRP Favours MSCs

Supplementary Figure 7 Forest plot of adverse reaction : MSCs+PRP vs MSCs.