

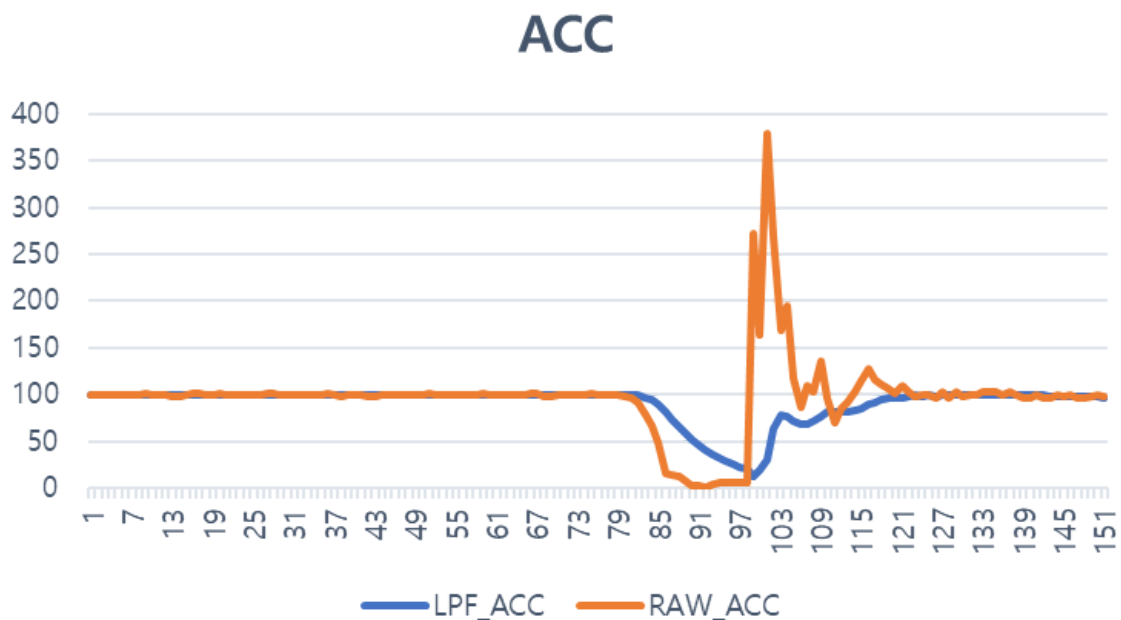
Test (C3 2.1.1) 231220

mannequin(FM)

NO.	추가된 동작			R01	R02	R03	R04
FM01	충격이 있는 추락 (시작 : stand)			O	O	O	O
FM02	충격이 있는 추락 (시작 :back)			O	O	O	O
FM03	경사면을 따라 추락			X	X	O	
FM04	높이별 추락	50cm	stand	O	O		
FM05			back	O	O		
FM06			front	O	X		
FM07		60cm	stand	O	O		
FM08			back	X	O		
FM09			front	X	O		
FM19	회전이 있는 추락			X	O	O	X

▼ 높이별 추락 Stand

▼ FM04R01



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0500: AG < -183, -228, 126> 974, 1055, 643>, RMS < 3, 45, 5> 24, 10>, JUMP ( 0, 0, 0), AVG < 87, 6>, PX < -10, 3, 4, 0> 7, 2, 974>, FALL [ 9, 3, 6, 0, 471(78), 0, 2 : 9], CF < -10>, TF
< 0>, 35 < 12, 26>
0501: AG < -51, -138, -51> 648, 999, 701>, RMS < 1, 40, 3> 21, 12>, JUMP ( 0, 0, 0), AVG < 84, 8>, PX < -11, 4, 5, 0> 0, 0, 648>, FALL [10, 4, 7, 0, 568(81), 0, 2 : 10], CF < -10>, TF
< 0>, 35 < 6, 31>
0502: AG < 60, -250, -198> 362, 1187, 737>, RMS < 4, 36, 3> 22, 13>, JUMP ( 0, 0, 0), AVG < 81, 10>, PX < -12, 5, 6, 0> 0, 0, 362>, FALL [11, 5, 8, 0, 665(83), 0, 2 : 11], CF < -10>, TF
< 0>, 35 < 8, 35>
0503: AG < -45, -343, 236> 302, 1020, 717>, RMS < 5, 32, 3> 19, 13>, JUMP ( 0, 0, 0), AVG < 78, 11>, PX < -12, 5, 6, 0> 0, 0, 302>, FALL [12, 6, 9, 0, 762(84), 0, 2 : 12], CF < -10>, TF
< 0>, 35 < 10, 38>
0504: AG < 60, -198, 394> 275, 1025, 687>, RMS < 5, 28, 3> 19, 14>, JUMP ( 0, 0, 0), AVG < 74, 12>, PX < -13, 6, 7, 0> 0, 0, 275>, FALL [13, 7, 10, 0, 859(85), 0, 2 : 13], CF < -10>, TF
< 0>, 35 < 14, 40>
0505: AG < -17, -210, 508> 291, 924, 679>, RMS < 6, 25, 4> 18, 14>, JUMP ( 0, 0, 0), AVG < 70, 13>, PX < -14, 6, 7, 0> 1, 0, 291>, FALL [14, 8, 11, 0, 955(86), 0, 4 : 14], CF < -10>, TF
< 0>, 35 < 16, 41>
0506: AG < -65, -202, 471> 369, 849, 672>, RMS < 6, 22, 5> 17, 15>, JUMP ( 0, 0, 0), AVG < 66, 13>, PX < -15, 7, 8, 0> 2, 0, 369>, FALL [15, 9, 12, 0, 1050(87), 0, 4 : 15], CF < -10>, TF
< 0>, 35 < 17, 43>
0507: AG < -58, -143, 405> 339, 720, 636>, RMS < 5, 20, 5> 15, 15>, JUMP ( 0, 0, 0), AVG < 62, 14>, PX < -16, 8, 9, 0> 2, 1, 339>, FALL [16, 10, 13, 0, 1145(88), 0, 4 : 16], CF < -10>, TF
< 0>, 35 < 17, 44> → (11)
0508: AG < 14646, 15350, 7310> -32766, 14224, -6194>, RMS < 273, 13, 65> 553, 32>, JUMP (273, 508, 0, 173), AVG < 58, 18>, PX < -17, 7, 8, 0> 0, 0, 0>, FALL [17, 11, 13, 1, 1145(88), 1, 4 : 0], TF < 1>, 35
< 284, 62>

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- HighCounter : 16 & LowCounter : 10 & LPF_ACC5 : 5 → Highcounter를 FallCounter로 사용하였음을 알 수 있음

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if (pObj->check_count >= (pObj->cfg->CONTINUE_COUNT - pObj->over_count2))
{

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- CONTINUE_COUNT : 20 & over_count2 : 4 (VV : 88) → 최종 임계값 16으로 조정되어 격발됨

▼ over_count2 증가 조건

<FOR NOT JUMP IN PAST>

1. pitch > 15 & Pitch_delta > 5 & pitch > 23 & (vv_avg > 70 || pitch ≥ pitch_angle_back(35))
 - a. over_count2 : 5
2. pitch > 15 & Pitch_delta > 5 & vv_avg > 60
 - a. over_count2 : (5 * (pitch-15)) / (pitch_angle_back(35)-15) (이 값이 > 0 일때)

<FOR STRETCHING>

1. pitch < 6 & wBendDownCounter > 1
 - a. over_count2 : (wBendDownCounter/2)+1
 - b. over_count2 >

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8) → over_count2 :

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8)
 - c. wOverCount > 0 & wOverCount + num >

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8) → over_count2 :

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT -
wOverCount

d. (num > 0) → over_count2 : -num

<NOT a JUMP & NO STRETCHING>

1. wOverCount < 1 & wBendDownCounter <1 & vv_avg > 85 :

a. over_count2 : 4

2. wOverCount < 1 & wBendDownCounter <1 & vv_avg > 75 :

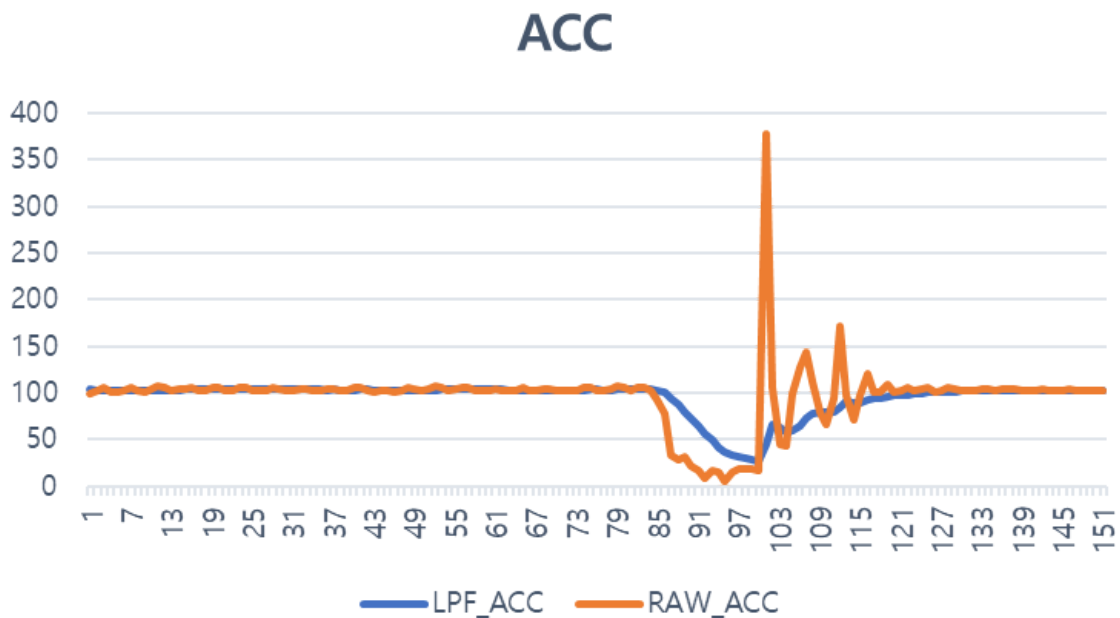
a. over_count2 : 2

→ 기본적인 추락 임계값은 20으로 상향 조정 되었으나 over_count2의 영향으로 임계값 감소 → 자유 낙하일 경우 , 제시된 78cm 보다 일찍 격발될 가능성이 높음

***나머 동일한 양상이므로 생략**

▼ 높이별 추락 back

▼ FM05R01



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0621: AG < -44, 409, 543>< 1564, 2868, -260>, RMS < 8, 57, 11>< 50, 28>, JUMP ( 0, 0, 0, 0), AVG < 95, 19>, PX < -11, 106, 5, X>< 8, 2, 1564>, FALL [ 7, 1, 5, 0, 344(68), 0, 0 : 7], CF < 4, 7, 614,
0, 0>, TF < 0>, 35 < 47, 75>
0622: AG < 420, -108, -1316>< -322, 3909, -577>, RMS < 16, 49, 5>< 60, 29>, JUMP ( 0, 0, 0, 0), AVG < 92, 23>, PX < -12, 188, 7, X>< 0, 0, 0>, FALL [ 8, 2, 6, 0, 439(73), 0, 5 : 8], CF < 4, 8, 614,
0, 0>, TF < 0>, 35 < 41, 83>
0623: AG < 693, -227, -1006>< -403, 2913, -711>, RMS < 15, 42, 7>< 46, 29>, JUMP ( 0, 0, 0, 0), AVG < 89, 26>, PX < -13, 109, 8, X>< 0, 0, 0>, FALL [ 9, 3, 7, 0, 532(76), 0, 5 : 9], CF < 4, 9, 614,
0, 0>, TF < 0>, 35 < 39, 86>
0624: AG < 77, -274, 491>< -750, 3148, -726>, RMS < 6, 36, 6>< 50, 29>, JUMP ( 0, 0, 0, 0), AVG < 86, 28>, PX < -14, 110, 9, X>< 0, 0, 0>, FALL [10, 4, 8, 0, 626(78), 0, 5 : 10], CF < 4, 10, 614,
0, 0>, TF < 0>, 35 < 37, 87>
0625: AG < 32, 107, 1264>< -992, 3359, -825>, RMS < 15, 33, 3>< 54, 30>, JUMP ( 0, 0, 0, 0), AVG < 82, 29>, PX < -15, 111, 10, X>< 0, 0, 0>, FALL [11, 5, 9, 0, 723(80), 0, 5 : 11], CF < 4, 11, 614,
0, 0>, TF < 0>, 35 < 36, 88>
0626: AG < -110, -70, 1556>< -662, 3235, -854>, RMS < 19, 31, 9>< 52, 31>, JUMP ( 0, 0, 0, 0), AVG < 78, 29>, PX < -16, 112, 11, X>< 0, 0, 0>, FALL [12, 6, 10, 0, 814(81), 0, 5 : 12], CF < 4, 12, 614,
0, 0>, TF < 0>, 35 < 40, 90>
0627: AG < -128, 102, 1485>< -330, 2872, -833>, RMS < 18, 30, 13>< 45, 33>, JUMP ( 0, 0, 0, 0), AVG < 75, 30>, PX < -17, 113, 12, X>< 0, 0, 0>, FALL [13, 7, 11, 0, 901(81), 0, 5 : 13], CF < 4, 13, 614,
0, 0>, TF < 0>, 35 < 52, 94>
0628: AG < -141, 110, 1513>< -142, 2571, -783>, RMS < 18, 28, 16>< 41, 34>, JUMP ( 0, 0, 0, 0), AVG < 71, 31>, PX < -18, 114, 13, X>< 0, 0, 0>, FALL [14, 8, 12, 0, 985(82), 0, 5 : 14], CF < 4, 14, 614,
0, 0>, TF < 0>, 35 < 55, 98>
0629: AG < -173, 02, 1459>< 41, 2117, -745>, RMS < 17, 27, 17>< 34, 34>, JUMP ( 0, 0, 0, 0), AVG < 67, 32>, PX < -19, 115, 14, X>< 1, 0, 41>, FALL [15, 9, 13, 0, 1068(82), 0, 5 : 15], CF < 4, 15, 614,
0, 0>, TF < 0>, 35 < 58, 101> > 41)

```

- HighCounter : 15 & LowCounter : 13 & LPF_ACC5 : 17 → Highcounter를 FallCounter로 사용하였음을 알 수 있음

```

if (pObj->check_count >= (pObj->cfg->CONTINUE_COUNT - pObj->over_count2))
{

```

- CONTINUE_COUNT : 20 & over_count2 : 5 → 최종 임계값 15으로 조정되어 격발됨

- pitch : 115 & pitch_delta : 14 & vv_avg : 82 → over_count : 5

▼ over_count2 증가 조건

<FOR NOT JUMP IN PAST>

1. pitch > 15 & Pitch_delta > 5 & pitch > 23 & (vv_avg > 70 || pitch ≥ pitch_angle_back(35))

a. over_count2 : 5

2. pitch > 15 & Pitch_delta > 5 & vv_avg > 60

- a. over_count2 : (5 * (pitch-15)) / (pitch_angle_back(35)-15) (이 값이 >0 일때)

<FOR STRETCHING>

1. pitch < 6 & wBendDownCounter > 1

- a. over_count2 : (wBendDownCounter/2)+1

- b. over_count2 >

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8) → over_count2 :

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8)

- c. wOverCount > 0 & wOverCount + num >

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8) →

over_count2 :
DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT -
wOverCount

d. (num > 0) → over_count2 : -num

<NOT a JUMP & NO STRETCHING>

1. wOverCount < 1 & wBendDownCounter < 1 & vv_avg > 85 :

a. over_count2 : 4

2. wOverCount < 1 & wBendDownCounter < 1 & vv_avg > 75 :

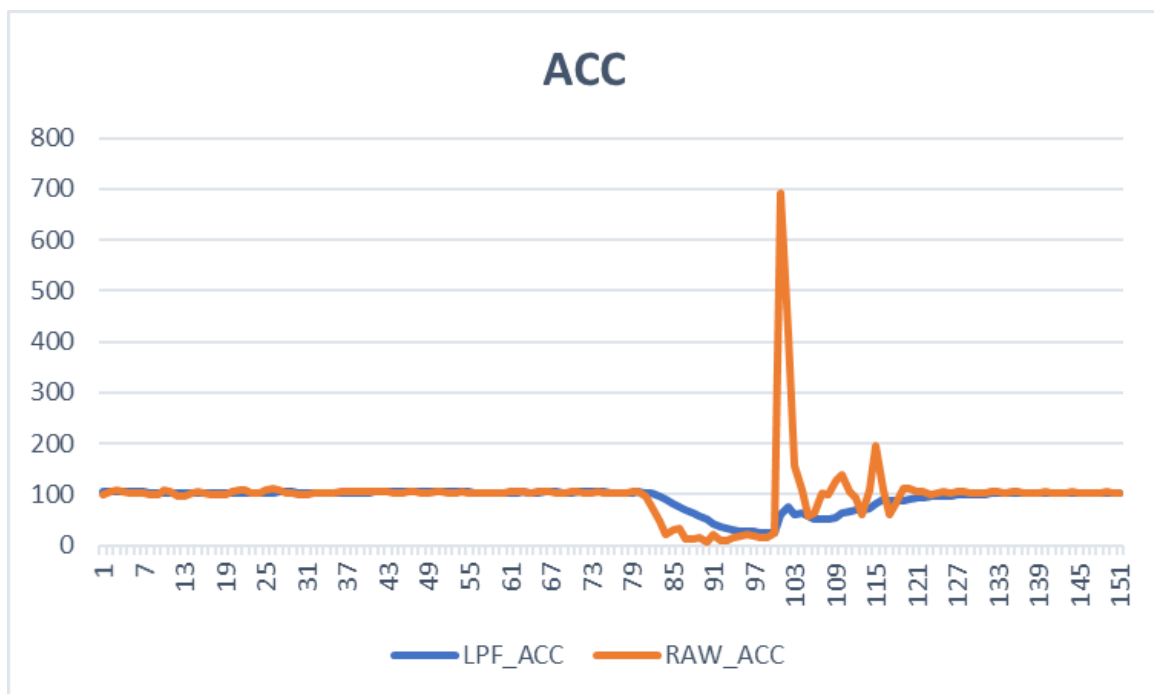
a. over_count2 : 2

→ 기본적인 추락 임계값은 20으로 상향 조정 되었으나 over_count2의 영향으로 임계값 감소

*R02 , FM08R02도 동일한 양상이므로 생략

*R02도 동일한 양상이므로 생략

▼ FM08R01



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1033: AG < -698, -1277, 2286> 3614, -1180, 205, RMS < 33, 75, 35> 58, 16, JUMP ( 0, 630, 6, 0), AVG < 99, 8, PX < 0, 87, 2, X< 7, 0, 3614>, FALL [ 5, 0, 3, 0, 167(55), 0, 0 : 5], CF < 4, 5, 1028,
0, 0, TF < 0, 35 < 82, 39,
1034: AG < -205, -259, 980> 3996, -714, 367, RMS < 12, 69, 29> 62, 21, JUMP ( 0, 630, 6, 0), AVG < 98, 13, PX < 0, 88, 3, X< 8, 0, 3996>, FALL [ 6, 0, 4, 0, 238(59), 0, 0 : 6], CF < 4, 6, 1028,
0, 0, TF < 0, 35 < 74, 50,
1035: AG < -304, -564, 939> 3213, -17, 295, RMS < 13, 62, 21> 49, 24, JUMP ( 0, 630, 6, 0), AVG < 95, 16, PX < -1, 89, 4, X< 8, 1, 3213>, FALL [ 7, 0, 5, 0, 317(63), 0, 0 : 7], CF < 4, 7, 1028,
0, 0, TF < 0, 35 < 58, 63,
1036: AG < -150, -539, 1034> 2265, 360, 291, RMS < 14, 56, 17> 35, 26, JUMP ( 0, 630, 6, 0), AVG < 93, 20, PX < -1, 91, 6, X< 8, 2, 2265>, FALL [ 8, 1, 6, 0, 400(66), 0, 0 : 8], CF < 4, 8, 1028,
0, 0, TF < 0, 35 < 39, 71,
1037: AG < -94, -264, 440> 964, 448, 82, RMS < 6, 50, 12> 36, 25, JUMP ( 0, 630, 6, 0), AVG < 90, 22, PX < -2, 92, 7, X< 0, 0, 964>, FALL [ 9, 2, 7, 0, 488(69), 0, 0 : 9], CF < 4, 9, 1028,
0, 0, TF < 0, 35 < 33, 75,
1038: AG < 498, -370, -1658> -273, -11, -14, RMS < 21, 43, 5> 4, 23, JUMP ( 0, 630, 6, 0), AVG < 87, 23, PX < -2, 93, 8, X< 0, 0, 964>, FALL [ 10, 3, 8, 0, 583(72), 0, 0 : 10], CF < 4, 10, 1028,
0, 0, TF < 0, 35 < 41, 74,
1039: AG < 345, -297, -704> -1005, -599, 28, RMS < 10, 36, 9> 17, 19, JUMP ( 0, 630, 6, 0), AVG < 84, 23, PX < -3, 94, 9, X< 0, 0, 964>, FALL [ 11, 4, 9, 0, 674(74), 0, 0 : 11], CF < 4, 11, 1028,
0, 0, TF < 0, 35 < 39, 57,
1040: AG < 28, -4, 693> -1490, -420, -36, RMS < 8, 32, 5> 23, 15, JUMP ( 0, 630, 6, 0), AVG < 80, 21, PX < -3, 95, 10, X< 0, 0, 964>, FALL [ 12, 5, 10, 0, 769(76), 0, 0 : 12], CF < 4, 12, 1028,
0, 0, TF < 0, 35 < 37, 67,
1041: AG < 15, -4, 1296> -1329, -417, -37, RMS < 15, 29, 4> 21, 11, JUMP ( 0, 630, 6, 0), AVG < 77, 18, PX < -3, 96, 11, X< 0, 0, 964>, FALL [ 13, 6, 11, 0, 865(78), 0, 0 : 13], CF < 4, 13, 1028,
0, 0, TF < 0, 35 < 41, 74,
1042: AG < -10, 35, 1525> -815, -451, -55, RMS < 18, 28, 10> 14, 9, JUMP ( 0, 630, 6, 0), AVG < 73, 15, PX < -4, 96, 11, X< 0, 0, 964>, FALL [ 14, 7, 12, 0, 955(79), 0, 0 : 14], CF < 4, 14, 1028,
0, 0, TF < 0, 35 < 41, 35,
1043: AG < -41, -6, 1680> -119, -562, -43, RMS < 20, 27, 14> 8, 8, JUMP ( 0, 630, 6, 0), AVG < 69, 12, PX < -4, 97, 12, X< 0, 0, 964>, FALL [ 15, 8, 13, 0, 1041(80), 0, 0 : 15], CF < 4, 15, 1028,
0, 0, TF < 0, 35 < 53, 28,
1044: AG < -95, 4, 1598> 360, -640, -26, RMS < 19, 26, 17> 11, 8, JUMP ( 0, 630, 6, 0), AVG < 65, 10, PX < -5, 98, 13, X< 0, 0, 360>, FALL [ 16, 9, 14, 0, 1124(80), 0, 0 : 16], CF < 4, 16, 1028,
0, 0, TF < 0, 35 < 57, 25,
1045: AG < 56, -69, 1350> 541, -675, -55, RMS < 16, 25, 17> 13, 8, JUMP ( 0, 630, 6, 0), AVG < 61, 8, PX < -5, 99, 14, X< 1, 0, 541>, FALL [ 17, 10, 15, 0, 1207(80), 0, 0 : 17], CF < 4, 17, 1028,
0, 0, TF < 0, 35 < 55, 24,
1046: AG < -325, -195, 1380> 715, -766, 26, RMS < 16, 24, 17> 15, 9, JUMP ( 0, 630, 6, 0), AVG < 57, 8, PX < -5, 99, 14, X< 2, 0, 715>, FALL [ 18, 11, 16, 0, 1290(80), 0, 0 : 18], CF < 4, 18, 1028,
0, 0, TF < 0, 35 < 53, 25,
1047: AG < 190, -942, 1242> 629, -594, -365, RMS < 24, 23, 16> 16, 10, JUMP ( 0, 630, 6, 0), AVG < 53, 8, PX < -6, 100, 15, X< 3, 0, 829>, FALL [ 19, 12, 17, 0, 1374(80), 0, 0 : 19], CF < 4, 19, 1028,
0, 0, TF < 0, 35 < 55, 27,
1048: AG < 3270, -3270, -3270> 32767, 32766, -31002, RMS < 692, 59, 178> 850, 50, JUMP ( 0, 630, 6, 0), AVG < 51, 17, PX < -7, 102, 17, X< 4, 0, 32767>, FALL [ 19, 13, 17, 1, 1374(80), 1, 0 : 0], TF < 1, 35 < 732, 69,
1049: AG < 1770, 8909, -32766> -16606, 17113, 1865, RMS < 415, 75, 203> 364, 94, JUMP ( 0, 630, 6, 0), AVG < 50, 34, PX < -9, 103, 18, X< 0, 0, 0, FALL [ 0, 0, 0, 2, 0(00), 2, 0 : 0], TF < 2, 35 < 1131, 154,

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- HighCounter : 19& LowCounter : 17 & LPF_ACC5 : 16 → Highcounter를 FallCounter로 사용하였음을 알 수 있음

• OverCount 조정 X

- pitch : 100& pitch_delta : 15 & vv_avg : 80 → over_count : 5 이나 jump_overcount: 6으로 overcount 조정되지 않음

▼ over_count2 증가 조건

<FOR NOT JUMP IN PAST>

1. pitch> 15 & Pitch_delta > 5 & pitch>23 & (vv_avg >70 || pitch ≥ pitch_angle_back(35))

a. over_count2 : 5

2. pitch> 15 & Pitch_delta > 5 & vv_avg > 60

a. over_count2 : (5 * (pitch-15)) / (pitch_angle_back(35)-15) (이 값이 >0 일때)

<FOR STRETCHING>

1. pitch < 6 & wBendDownCounter >1

a. over_count2 : (wBendDownCounter/2)+1

b. over_count2 >

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8) →

over_count2 :

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8)

c. wOverCount >0 & wOverCount + num >

DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8) →

over_count2 :
 DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT -
 wOverCount

d. (num > 0) → over_count2 : -num

<NOT a JUMP & NO STRETCHING>

1. wOverCount < 1 & wBendDownCounter <1 & vv_avg> 85 :

a. over_count2 : 4

2. wOverCount < 1 & wBendDownCounter <1 & vv_avg> 75 :

a. over_count2 : 2

• jump_overcount

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0626: AG < -1516, 1711, 8649> 2274, 5584, -817, RMS <109, 99, 114> 92, 58, JUMP ( 0, 621, 0, 0), AVG < 99, 45>, PX < -1, 108, 2, X> 0, 0, 2274>, FALL [ 0, 0, 0, 28, 0(00), 0, 0 : 0], TF < 0>, 35
< 378, 168>
0627: AG < -1176, 3186, 10852> 856, 3279, -1319, RMS <129, 101, 116> 55, 59, JUMP ( 0, 621, 0, 0), AVG < 98, 51>, PX < -2, 108, 2, X> 0, 0, 856>, FALL [ 0, 0, 0, 28, 0(00), 0, 0 : 0], TF < 0>, 35
< 372, 171>
0628: AG < -2713, 3824, 12736> -1598, 658, -2899, RMS <165, 106, 131> 40, 54, JUMP (165, 628, 0, 65), AVG < 98, 54>, PX < -3, 109, 3, X> 0, 0, 856>, FALL [ 0, 0, 0, 28, 0(00), 0, 0 : 0], TF < 0>, 35
< 403, 171>
0629: AG < -3315, 4177, 14447> -5319, -1780, -2983, RMS <187, 114, 152> 96, 43, JUMP (187, 629, 0, 152), AVG < 98, 53>, PX < -4, 110, 4, X> 0, 0, 856>, FALL [ 0, 0, 0, 28, 0(00), 1, 0 : 0], TF < 0>, 35
< 421, 156>
0630: AG < -402, 5138, 18455> -4783, -3645, -5218, RMS <142, 128, 157> 117, 180, JUMP (187, 630, 6, 194), AVG < 99, 48>, PX < -5, 111, 5, X> 0, 0, 856>, FALL [ 0, 0, 0, 28, 0(00), 1, 0 : 0], TF < 0>, 35
< 434, 127>
0631: AG < -1242, 4271, 9357> -7165, -8373, -2368, RMS <126, 121, 145> 171, 19, JUMP (187, 630, 6, 194), AVG < 99, 41>, PX < -6, 112, 6, X> 0, 0, 856>, FALL [ 0, 0, 0, 28, 0(00), 3, 0 : 0], TF < 0>, 35
< 455, 92>
0632: AG < -778, 2178, 6914> -5586, -8421, -1816, RMS < 88, 119, 127> 156, 22, JUMP (187, 630, 6, 194), AVG <100, 33>, PX < -6, 112, 6, X> 0, 0, 856>, FALL [ 0, 0, 0, 28, 0(00), 4, 0 : 0], TF < 0>, 35
< 356, 71>
0633: AG < -44, 2132, 8123> -4582, -8719, -1513, RMS <102, 116, 112> 152, 33, JUMP (187, 630, 6, 194), AVG <101, 29>, PX < -6, 112, 6, X> 0, 0, 856>, FALL [ 0, 0, 0, 28, 0(00), 0, 0 : 0], TF < 0>, 35
< 316, 74>

```

◦ JumpMaxValue : 187 → 3+(5*(1870260))/40 → Jump_overcount : 6



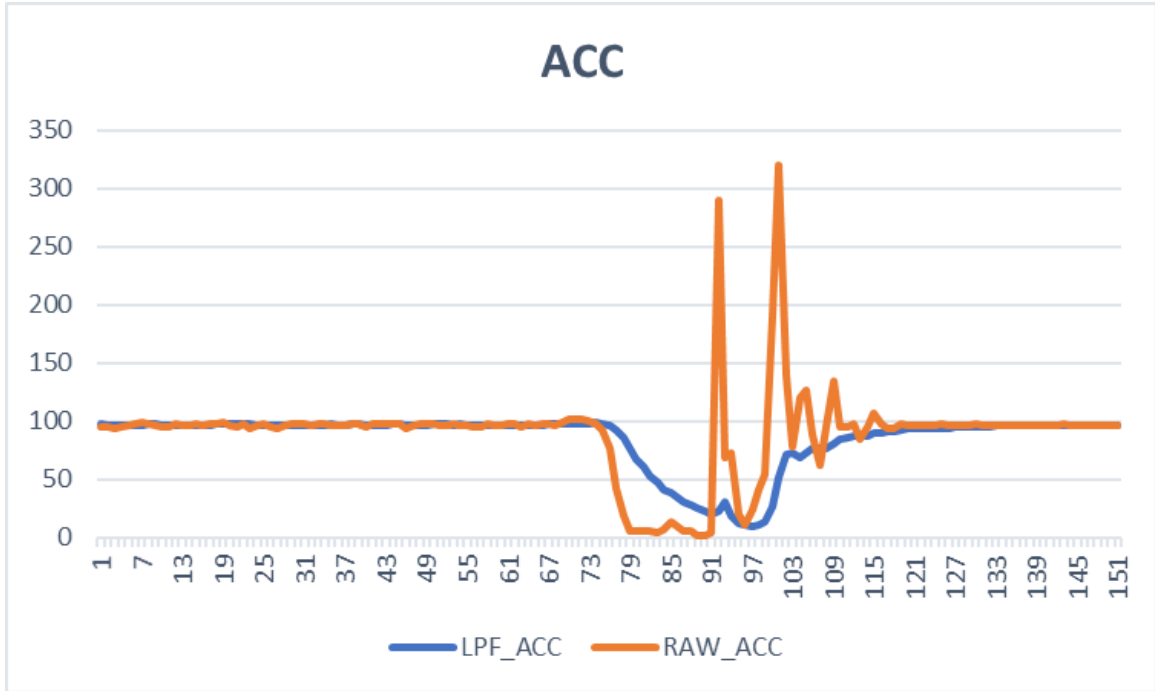
점프 임계값 종료 error?

- 마지막 점프 조건(140<Raw_Acc<400) 충족 사례 이후 50 샘플 이 경과 하였으나, reset 되지 않음

***R02도 동일한 양상이므로 생략**

▼ 높이별 추락 front

▼ FM06R01



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0431: AG < -154, -525, -1477>< -126, -2187, 701>, RMS < 19, 85, 54>< 35, 8>, JUMP ( 0, 111, 0, 0), AVG < 96, 4>, PX < 1, -78, 1, 0>< 0, 0, 0>, FALL [ 3, 0, 1, 0, 46(46), 0, 0 : 0], TF < 0>, 35
< 137, 18>
0432: AG < -304, -61, -274>< 118, -3731, 802>, RMS < 5, 76, 33>< 58, 12>, JUMP ( 0, 111, 0, 0), AVG < 95, 6>, PX < 2, -78, 1, 0>< 1, 0, 118>, FALL [ 4, 0, 2, 0, 113(56), 0, 0 : 0], TF < 0>, 35
< 66, 26>
0433: AG < -64, -100, -469>< -347, -4700, 1044>, RMS < 5, 67, 19>< 73, 18>, JUMP ( 0, 111, 0, 0), AVG < 93, 9>, PX < 2, -77, 2, 0>< 0, 0, 0>, FALL [ 5, 0, 3, 0, 194(64), 0, 0 : 5], CF <-10>, TF
< 0>, 35 < 29, 38>
0434: AG < 135, -216, -489>< -284, -4416, 1113>, RMS < 6, 60, 13>< 69, 24>, JUMP ( 0, 111, 0, 0), AVG < 91, 13>, PX < 2, -76, 3, 0>< 0, 0, 0>, FALL [ 6, 1, 4, 0, 281(70), 0, 0 : 6], CF <-10>, TF
< 0>, 35 < 16, 54>
0435: AG < -418, -31, 157>< -583, -4580, 1093>, RMS < 5, 53, 8>< 72, 30>, JUMP ( 0, 111, 0, 0), AVG < 89, 18>, PX < 1, -76, 3, 0>< 0, 0, 0>, FALL [ 7, 2, 5, 0, 373(74), 0, 0 : 7], CF <-10>, TF
< 0>, 35 < 16, 72>
0436: AG < -339, -35, 193>< -399, -4834, 1033>, RMS < 4, 47, 4>< 75, 35>, JUMP ( 0, 111, 0, 0), AVG < 87, 23>, PX < 1, -75, 4, 0>< 0, 0, 0>, FALL [ 8, 3, 6, 0, 469(78), 0, 2 : 8], CF <-10>, TF
< 0>, 35 < 15, 89>
0437: AG < -213, -175, -589>< -714, -4183, 992>, RMS < 7, 41, 4>< 65, 39>, JUMP ( 0, 111, 0, 0), AVG < 84, 29>, PX < 1, -75, 4, 0>< 0, 0, 0>, FALL [ 9, 4, 7, 0, 565(80), 0, 2 : 9], CF <-10>, TF
< 0>, 35 < 16, 104>
0438: AG < -288, -308, -1083>< -1321, -4883, 1007>, RMS < 13, 38, 7>< 67, 42>, JUMP ( 0, 111, 0, 0), AVG < 81, 34>, PX < 0, -74, 5, 0>< 0, 0, 0>, FALL [10, 5, 8, 0, 658(82), 0, 2 : 10], CF <-10>, TF
< 0>, 35 < 24, 110>
0439: AG < 335, -115, -702>< -1584, -3875, 901>, RMS < 9, 34, 8>< 65, 45>, JUMP ( 0, 111, 0, 0), AVG < 78, 38>, PX < 0, -74, 5, 0>< 0, 0, 0>, FALL [11, 6, 9, 0, 750(83), 0, 2 : 11], CF <-10>, TF
< 0>, 35 < 29, 126>
0440: AG < -148, -243, -461>< -1784, -3190, 764>, RMS < 6, 31, 8>< 56, 46>, JUMP ( 0, 111, 0, 0), AVG < 75, 41>, PX < 0, -73, 6, 0>< 0, 0, 0>, FALL [12, 7, 10, 0, 842(84), 0, 2 : 12], CF <-10>, TF
< 0>, 35 < 20, 133>
0441: AG < 178, -50, -377>< -1797, -2953, 658>, RMS < 5, 28, 6>< 53, 47>, JUMP ( 0, 111, 0, 0), AVG < 71, 43>, PX < 0, -73, 6, 0>< 0, 0, 0>, FALL [13, 8, 11, 0, 936(85), 0, 2 : 13], CF <-10>, TF
< 0>, 35 < 20, 138>
0442: AG < 30, -26, -117>< -1810, -2527, 566>, RMS < 1, 25, 5>< 48, 47>, JUMP ( 0, 111, 0, 0), AVG < 68, 45>, PX < -1, -72, 7, 0>< 0, 0, 0>, FALL [14, 9, 12, 0, 1031(85), 0, 2 : 14], CF <-10>, TF
< 0>, 35 < 12, 140>
0443: AG < 54, -184, -197>< -1657, -2286, 484>, RMS < 2, 22, 3>< 43, 46>, JUMP ( 0, 111, 0, 0), AVG < 64, 46>, PX < -1, -72, 7, 0>< 0, 0, 0>, FALL [15, 10, 13, 0, 1128(86), 0, 4 : 15], CF <-10>, TF
< 0>, 35 < 8, 140>
0444: AG < 187, -145, -333>< -1484, -1985, 327>, RMS < 4, 28, 3>< 37, 46>, JUMP ( 0, 111, 0, 0), AVG < 60, 46>, PX < -2, -72, 7, 0>< 0, 0, 0>, FALL [16, 11, 14, 0, 1225(87), 0, 4 : 16], CF <-10>, TF
< 0>, 35 < 7, 139> -> (1)
```

- HighCounter : 16 & LowCounter : 14 & LPF_ACC5 : 3 → Highcounter를 FallCounter로 사용하였음을 알 수 있음

```
if (pObj->check_count >= (pObj->cfg->CONTINUE_COUNT - pObj->over_count2))
{
```

- CONTINUE_COUNT : 20 & over_count2 : 4 → 최종 임계값 16으로 조정되어 격발됨

▼ over_count2 증가 조건

<FOR NOT JUMP IN PAST>

1. pitch > 15 & Pitch_delta > 5 & pitch > 23 & (vv_avg > 70 || pitch ≥ pitch_angle_back(35))

- a. over_count2 : 5
- 2. pitch > 15 & Pitch_delta > 5 & vv_avg > 60
 - a. over_count2 : (5 * (pitch-15)) / (pitch_angle_back(35)-15) (이 값이 >0 일때)

<FOR STRETCHING>

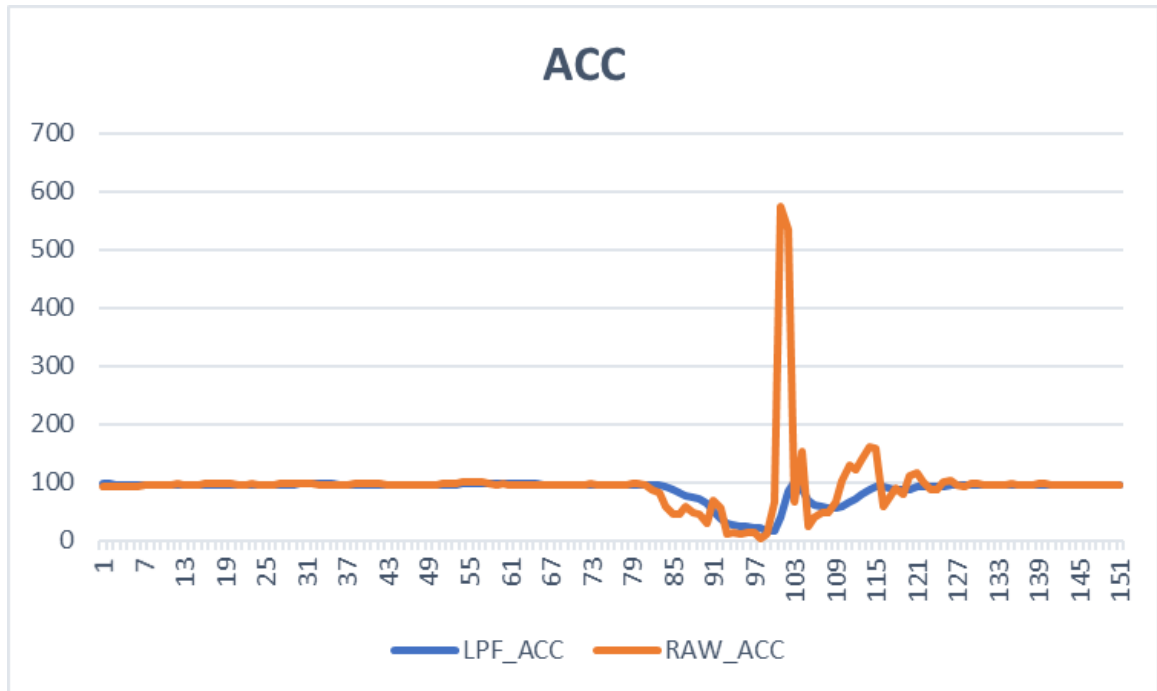
- 1. pitch < 6 & wBendDownCounter > 1
 - a. over_count2 : (wBendDownCounter/2)+1
 - b. over_count2 >
 - DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8) →
 - over_count2 :
 - DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8)
 - c. wOverCount > 0 & wOverCount + num >
 - DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8) →
 - over_count2 :
 - DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT - wOverCount
 - d. (num > 0) → over_count2 : -num

<NOT a JUMP & NO STRETCHING>

- 1. wOverCount < 1 & wBendDownCounter < 1 & vv_avg > 85 :
 - a. over_count2 : 4
- 2. wOverCount < 1 & wBendDownCounter < 1 & vv_avg > 75 :
 - a. over_count2 : 2

→ 기본적인 추락 임계값은 20으로 상향 조정 되었으나 over_count2의 영향으로 임계값 감소 → 뒤로 넘어진 자세가 아니므로, FM05와 같이 pitch 값을 기준으로 한 over count2 조정은 되지 않음

▼ FM06R02



```

0307: AG < 192, -20, -6637<-715, -27, 143>, RMS < 81, 94, 88>< 11, 4>, JUMP ( 0, 0, 0, 0), AVG < 95, 2>, PX < 2, -79, 0, 0>< 0, 0, 0>, FALL [ 2, 0, 0, 19, 0(00), 0, 0 : 0], TF < 0>, 35
< 261, 0>
0308: AG < -115, -245, -4664<-479, 125, 586>, RMS < 57, 91, 79>< 11, 3>, JUMP ( 0, 0, 0, 0), AVG < 95, 2>, PX < 2, -79, 0, 0>< 1, 0, 479>, FALL [ 3, 0, 0, 19, 0(00), 0, 0 : 0], TF < 0>, 35
< 224, 10>
0309: AG < -464, -1005, -3512<-871, 558, 751>, RMS < 44, 86, 65>< 19, 2>, JUMP ( 0, 0, 0, 0), AVG < 95, 2>, PX < 3, -79, 0, 0>< 2, 0, 871>, FALL [ 4, 0, 0, 19, 0(00), 0, 0 : 0], TF < 0>, 35
< 182, 9>
0310: AG < 162, -1482, -3333<-373, 127, 213>, RMS < 44, 81, 54>< 6, 3>, JUMP ( 0, 0, 0, 0), AVG < 94, 3>, PX < 3, -78, 1, 0>< 0, 0, 0>, FALL [ 5, 0, 1, 0, 46(46), 0, 0 : 0], TF < 0>, 35
< 145, 8>
0311: AG < 474, -2802, -4229<-1774, -82, -586>, RMS < 57, 77, 52>< 28, 3>, JUMP ( 0, 0, 0, 0), AVG < 93, 3>, PX < 4, -78, 1, 0>< 0, 0, 0>, FALL [ 6, 0, 2, 0, 94(47), 0, 0 : 0], TF < 0>, 35
< 145, 8>
0312: AG < 302, 252, -3974<-3632, -1863, -1214>, RMS < 48, 74, 51>< 64, 7>, JUMP ( 0, 0, 0, 0), AVG < 92, 3>, PX < 4, -77, 2, 0>< 0, 0, 0>, FALL [ 7, 0, 3, 0, 143(47), 0, 0 : 7], CF <-10>, TF
< 0>, 35 < 149, 13>
0313: AG < 638, 404, -3645<-3125, -2961, -1697>, RMS < 45, 70, 48>< 70, 13>, JUMP ( 0, 0, 0, 0), AVG < 90, 5>, PX < 4, -77, 2, 0>< 0, 0, 0>, FALL [ 8, 0, 4, 0, 195(48), 0, 0 : 8], CF <-10>, TF
< 0>, 35 < 150, 23>
0314: AG < -356, -1139, 2198<-905, -3945, -1320>, RMS < 30, 63, 30>< 64, 18>, JUMP ( 0, 0, 0, 0), AVG < 89, 8>, PX < 5, -76, 3, 0>< 0, 0, 0>, FALL [ 9, 0, 5, 0, 265(53), 0, 0 : 9], CF <-10>, TF
< 0>, 35 < 123, 30>
0315: AG < -1227, -1200, 5319<-2236, -1487, -710>, RMS < 68, 50, 11>< 42, 22>, JUMP ( 0, 0, 0, 0), AVG < 87, 12>, PX < 5, -76, 3, 0>< 0, 0, 0>, FALL [ 10, 1, 6, 0, 354(59), 0, 0 : 10], CF <-10>, TF
< 0>, 35 < 143, 53>
0316: AG < -749, 560, 4515<-4695, -45, -384>, RMS < 56, 38, 33>< 71, 25>, JUMP ( 0, 0, 0, 0), AVG < 84, 17>, PX < 5, -76, 3, 0>< 0, 0, 0>, FALL [ 11, 2, 7, 0, 421(60), 0, 0 : 11], CF <-10>, TF
< 0>, 35 < 154, 65>
0317: AG < -54, 603, 812<-5334, 711, -112>, RMS < 12, 29, 32>< 82, 30>, JUMP ( 0, 0, 0, 0), AVG < 80, 21>, PX < 5, -76, 3, 0>< 0, 0, 0>, FALL [ 12, 3, 8, 0, 489(61), 1, 0 : 12], CF <-10>, TF
< 0>, 35 < 136, 77>
0318: AG < -21, 21, -1195<-5189, -745, -4>, RMS < 14, 26, 16>< 79, 35>, JUMP ( 0, 0, 0, 0), AVG < 77, 26>, PX < 6, -76, 3, 0>< 0, 0, 0>, FALL [ 13, 4, 9, 0, 573(63), 2, -2 : 13], CF <-10>, TF
< 0>, 35 < 82, 90>
0319: AG < -7, -160, -818<-5352, -415, 87>, RMS < 10, 24, 3>< 81, 40>, JUMP ( 0, 0, 0, 0), AVG < 73, 30>, PX < 6, -76, 3, 0>< 0, 0, 0>, FALL [ 14, 5, 10, 0, 670(67), 3, -2 : 14], CF <-10>, TF
< 0>, 35 < 36, 105>
0320: AG < 69, -530, -987<-5671, 26, -68>, RMS < 13, 23, 4>< 86, 45>, JUMP ( 0, 0, 0, 0), AVG < 70, 35>, PX < 6, -76, 3, 0>< 0, 0, 0>, FALL [ 15, 6, 11, 0, 766(69), 4, -3 : 15], CF <-10>, TF
< 0>, 35 < 37, 120>
0321: AG < 250, -404, -1113<-5172, 305, -185>, RMS < 14, 22, 9>< 79, 49>, JUMP ( 0, 0, 0, 0), AVG < 66, 39>, PX < 7, -76, 3, 0>< 0, 0, 0>, FALL [ 16, 7, 12, 0, 857(71), 5, -3 : 16], CF <-10>, TF
< 0>, 35 < 37, 134>
0322: AG < 127, 26, 342<-4455, 18, -498>, RMS < 4, 20, 7>< 68, 52>, JUMP ( 0, 0, 0, 0), AVG < 62, 44>, PX < 7, -77, 2, 0>< 0, 0, 0>, FALL [ 17, 8, 13, 0, 950(73), 0, 0 : 17], CF <-10>, TF
< 0>, 35 < 31, 146>
0323: AG < 10, -285, 814<-3927, 475, -528>, RMS < 10, 16, 2>< 60, 53>, JUMP ( 0, 0, 0, 0), AVG < 58, 47>, PX < 7, -77, 2, 0>< 0, 0, 0>, FALL [ 18, 9, 14, 0, 1048(74), 0, 0 : 18], CF <-10>, TF
< 0>, 35 < 28, 154>
0324: AG < 1926, -809, -1757<-3268, 1034, -4>, RMS < 67, 16, 17>< 51, 53>, JUMP ( 0, 0, 0, 0), AVG < 54, 50>, PX < 8, -78, 1, 0>< 0, 0, 0>, FALL [ 19, 10, 15, 0, 1131(75), 0, 0 : 19], CF <-10>, 0, 105
< 0>, TF < 0>, 35 < 61, 158>
0325: AG < -8576, 32766, -32766<-32767, 32766, -3651>, RMS < 575, 40, 126>< 709, 34>, JUMP ( 0, 0, 0, 0), AVG < 51, 48>, PX < 9, -77, 2, 0>< 1, 0, 32767>, FALL [ 19, 11, 15, 1, 1131(75), 1, 0 : 0], TF < 1>, 35
< 652, 140>

```

- HighCounter : 19& LowCounter : 15&LPF_ACC5 : 17 → Highcounter를 FallCounter로 사용하였음을 알 수 있음

- OverCount 조정 X

▼ over_count2 증가 조건

<FOR NOT JUMP IN PAST>

1. pitch> 15 & Pitch_delta > 5 & pitch>23 & (vv_avg >70 || pitch ≥ pitch_angle_back(35))

a. over_count2 : 5

2. $\text{pitch} > 15 \ \& \ \text{Pitch_delta} > 5 \ \& \ \text{vv_avg} > 60$

a. $\text{over_count2} : (5 * (\text{pitch} - 15)) / (\text{pitch_angle_back}(35) - 15)$ (이 값이 >0 일때)

<FOR STRETCHING>

1. $\text{pitc} < 6 \ \& \ \text{wBendDownCounter} > 1$

a. $\text{over_count2} : (\text{wBendDownCounter} / 2) + 1$

b. $\text{over_count2} >$
 $\text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8) \rightarrow$
 $\text{over_count2} :$
 $\text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8)$

c. $\text{wOverCount} > 0 \ \& \ \text{wOverCount} + \text{num} >$
 $\text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8) \rightarrow$
 $\text{over_count2} :$
 $\text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} -$
 wOverCount

d. $(\text{num} > 0) \rightarrow \text{over_count2} : -\text{num}$

<NOT a JUMP & NO STRETCHING>

1. $\text{wOverCount} < 1 \ \& \ \text{wBendDownCounter} < 1 \ \& \ \text{vv_avg} > 85 :$

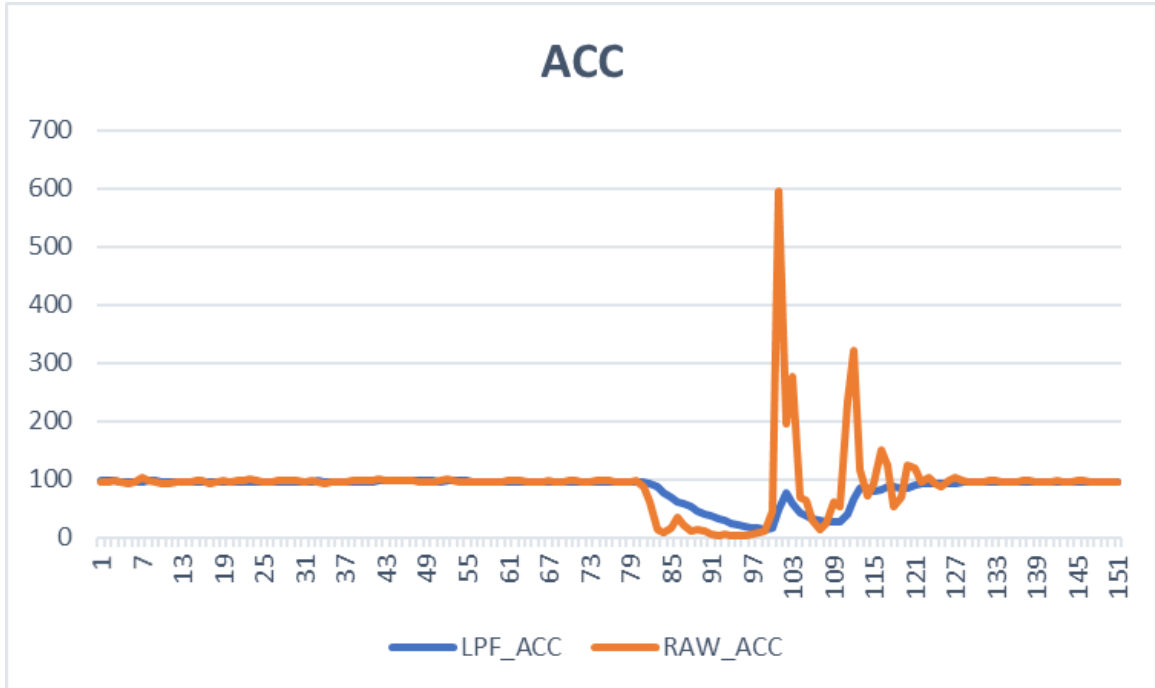
a. $\text{over_count2} : 4$

2. $\text{wOverCount} < 1 \ \& \ \text{wBendDownCounter} < 1 \ \& \ \text{vv_avg} > 75 :$

a. $\text{over_count2} : 2$

- R01과 달리 Over_count2 가 조정되지 않음 $\rightarrow \text{vv_avg} : 75$ (임계값에 걸림)
- 충격 이전 값을 보면, Bendcounter의 영향으로 over_count2 가 음수가 되는 것을 확인 가능
 - 추락을 하며 회전이 발생해 GyroX 값 음수 방향으로 변화 $\rightarrow$ Bendcounter 증가

▼ FM09R02



```

< 264, >>
0656: AG < 92, 171, -1140>< -8, -1433, -325>, RMS < 14, 87, 62>< 22, 3>, JUMP ( 0, 54, 6, 0), AVG < 95, 1>, PX < -4, -101, 0, 0>< 0, 0, 0>, FALL [ 3, 0, 0, 43, 0(00), 0, 0 : 0], TF < 0>, 35
< 161, >>
0657: AG < -336, -539, 514>< 845, -2758, -481>, RMS < 9, 77, 34>< 44, 6>, JUMP ( 0, 54, 6, 0), AVG < 94, 2>, PX < -4, -101, 0, 0>< 1, 0, 845>, FALL [ 4, 0, 1, 0, 66(66), 0, 0 : 0], TF < 0>, 35
< 83, 11>
0658: AG < -1201, -62, -593>< 1743, -4133, -379>, RMS < 16, 68, 18>< 68, 12>, JUMP ( 0, 54, 6, 0), AVG < 93, 5>, PX < -3, -100, 1, 0>< 2, 0, 1743>, FALL [ 5, 0, 2, 0, 148(74), 0, 0 : 5], CF <-10>, TF
< 0>, 35 < 39, 21>
0659: AG < 769, 749, -2742>< 2896, -2495, -1>, RMS < 35, 62, 19>< 58, 18>, JUMP ( 0, 54, 6, 0), AVG < 91, 8>, PX < -3, -99, 2, 0>< 3, 0, 2896>, FALL [ 6, 0, 3, 0, 229(76), 0, 0 : 6], CF <-10>, TF
< 0>, 35 < 69, 36>
0660: AG < -125, 76, -1818>< 2762, -1707, 195>, RMS < 22, 58, 23>< 49, 22>, JUMP ( 0, 54, 6, 0), AVG < 89, 12>, PX < -3, -99, 2, 0>< 3, 1, 2762>, FALL [ 7, 1, 4, 0, 386(76), 0, 0 : 7], CF <-10>, TF
< 0>, 35 < 73, 52>
0661: AG < -163, -844, -60>< 1640, -2268, 608>, RMS < 18, 52, 17>< 43, 24>, JUMP ( 0, 54, 6, 0), AVG < 87, 16>, PX < -3, -98, 3, 0>< 3, 2, 1640>, FALL [ 8, 2, 5, 0, 389(77), 0, 0 : 8], CF <-10>, TF
0662: AG < -108, -1108, 388>< 1437, -2174, 1053>, RMS < 14, 46, 10>< 42, 26>, JUMP ( 0, 54, 6, 0), AVG < 84, 20>, PX < -3, -97, 4, 0>< 0, 0, 1437>, FALL [ 9, 3, 6, 0, 479(79), 0, 0 : 9], CF <-10>, TF
< 0>, 35 < 46, 72>
0663: AG < 33, -670, -566>< 1338, -2150, 1467>, RMS < 10, 40, 9>< 44, 28>, JUMP ( 0, 54, 6, 0), AVG < 81, 23>, PX < -3, -96, 5, 0>< 0, 0, 1338>, FALL [ 10, 4, 7, 0, 570(81), 0, 0 : 10], CF <-10>, TF
< 0>, 35 < 34, 78>
0664: AG < 146, -259, -430>< 1075, -2570, 1780>, RMS < 6, 36, 8>< 50, 30>, JUMP ( 0, 54, 6, 0), AVG < 78, 26>, PX < -3, -95, 6, 0>< 0, 0, 1075>, FALL [ 11, 5, 8, 0, 662(82), 0, 0 : 11], CF <-10>, TF
< 0>, 35 < 30, 84>
0665: AG < -248, -142, 150>< 834, -2623, 1994>, RMS < 3, 32, 6>< 51, 32>, JUMP ( 0, 54, 6, 0), AVG < 75, 28>, PX < -3, -94, 7, 0>< 0, 0, 834>, FALL [ 12, 6, 9, 0, 756(84), 0, 0 : 12], CF <-10>, TF
< 0>, 35 < 19, 90>
0666: AG < -203, 48, 398>< 881, -2701, 2040>, RMS < 5, 28, 3>< 53, 34>, JUMP ( 0, 54, 6, 0), AVG < 72, 30>, PX < -3, -93, 8, 0>< 1, 0, 881>, FALL [ 13, 7, 10, 0, 853(85), 0, 0 : 13], CF <-10>, TF
< 0>, 35 < 14, 96>
0667: AG < -220, 9, 309>< 1022, -2857, 1946>, RMS < 4, 24, 3>< 55, 36>, JUMP ( 0, 54, 6, 0), AVG < 68, 32>, PX < -3, -92, 9, 0>< 2, 0, 1022>, FALL [ 14, 8, 11, 0, 950(86), 0, 0 : 14], CF <-10>, TF
< 0>, 35 < 12, 102>
0668: AG < -76, -186, 316>< 1119, -2867, 2017>, RMS < 4, 21, 3>< 56, 38>, JUMP ( 0, 54, 6, 0), AVG < 65, 34>, PX < -3, -91, 10, 0>< 3, 0, 1119>, FALL [ 15, 9, 12, 0, 1047(87), 0, 0 : 15], CF <-10>, TF
< 0>, 35 < 13, 108>
0669: AG < 63, -233, -21>< 1230, -3070, 2070>, RMS < 2, 18, 3>< 59, 40>, JUMP ( 0, 54, 6, 0), AVG < 61, 36>, PX < -3, -90, 11, 0>< 4, 0, 1230>, FALL [ 16, 10, 13, 0, 1144(88), 0, 0 : 16], CF <-10>, TF
< 0>, 35 < 10, 114>
0670: AG < 104, -259, -500>< 1055, -3293, 2083>, RMS < 6, 16, 2>< 61, 42>, JUMP ( 0, 54, 6, 0), AVG < 57, 38>, PX < -4, -89, 12, 0>< 4, 1, 1055>, FALL [ 17, 11, 14, 0, 1242(88), 0, 0 : 17], CF <-10>, TF
< 0>, 35 < 12, 120>
0671: AG < 111, -283, -639>< 952, -3554, 1982>, RMS < 8, 15, 4>< 63, 45>, JUMP ( 0, 54, 6, 0), AVG < 53, 40>, PX < -4, -88, 13, 0>< 4, 2, 952>, FALL [ 18, 12, 15, 0, 1338(89), 0, 0 : 18], CF <-10>, TF
< 0>, 35 < 16, 127>
0672: AG < -131, -128>< 822, -3529, 1820>, RMS < 12, 14, 7>< 81, 47>, JUMP ( 0, 54, 6, 0), AVG < 48, 42>, PX < -5, -87, 14, 0>< 0, 0, 822>, FALL [ 19, 13, 16, 0, 1431(89), 0, 0 : 19], CF <-10>, TF
0673: AG < 995, -2288, -2739>< 494, -3553, 1848>, RMS < 45, 15, 17>< 61, 48>, JUMP ( 0, 54, 6, 0), AVG < 44, 44>, PX < -5, -86, 15, 0>< 0, 0, 494>, FALL [ 20, 14, 17, 0, 1514(89), 0, 0 : 20], CF <-10>, TF
< 0>, 35 < 65, 140>

```

- HighCounter : 20& LowCounter : 17&LPF_ACC5 : 17 → Highcounter를 FallCounter로 사용하였음을 알 수 있음
- OverCount 조정 X

▼ over_count2 증가 조건

<FOR NOT JUMP IN PAST>

1. pitch> 15 & Pitch_delta > 5 & pitch>23 & (vv_avg >70 || pitch ≥ pitch_angle_back(35))

a. over_count2 : 5

2. $\text{pitch} > 15 \ \& \ \text{Pitch_delta} > 5 \ \& \ \text{vv_avg} > 60$

a. $\text{over_count2} : (5 * (\text{pitch} - 15)) / (\text{pitch_angle_back}(35) - 15)$ (이 값이 >0 일때)

<FOR STRETCHING>

1. $\text{pitc} < 6 \ \& \ \text{wBendDownCounter} > 1$

a. $\text{over_count2} : (\text{wBendDownCounter} / 2) + 1$

b. $\text{over_count2} >$
 $\text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8) \rightarrow$
 $\text{over_count2} :$
 $\text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8)$

c. $\text{wOverCount} > 0 \ \& \ \text{wOverCount} + \text{num} >$
 $\text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8) \rightarrow$
 $\text{over_count2} :$
 $\text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} -$
 wOverCount

d. $(\text{num} > 0) \rightarrow \text{over_count2} : -\text{num}$

<NOT a JUMP & NO STRETCHING>

1. **$\text{wOverCount} < 1 \ \& \ \text{wBendDownCounter} < 1 \ \& \ \text{vv_avg} > 85 :$**

a. **$\text{over_count2} : 4$**

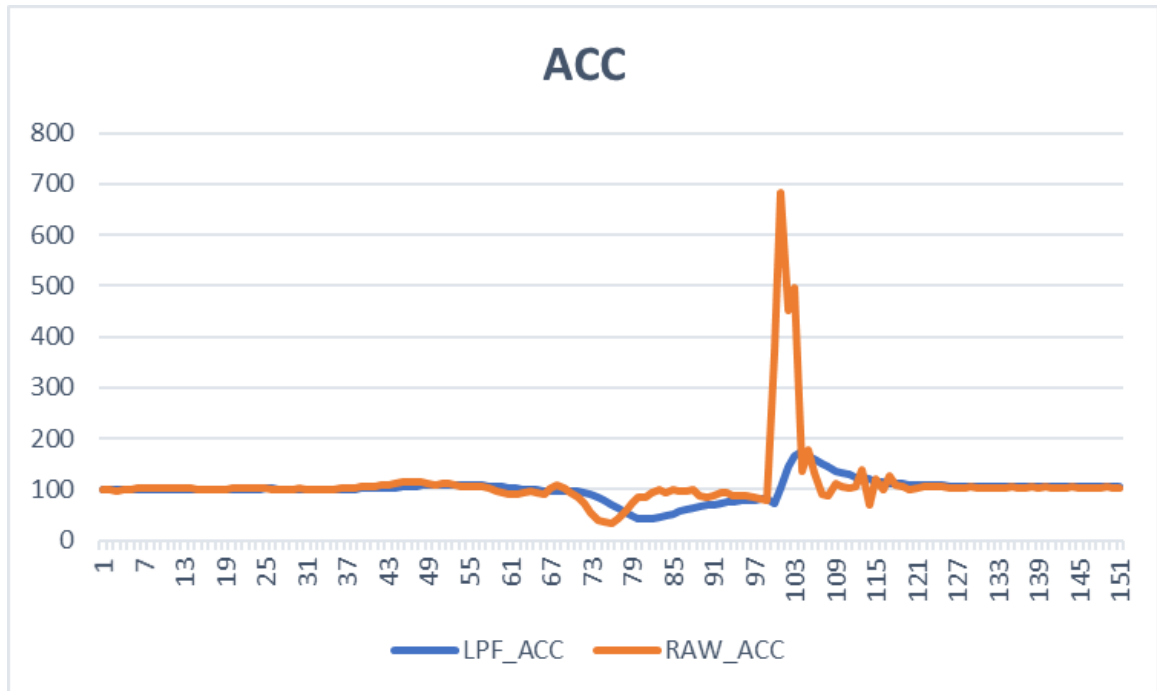
2. $\text{wOverCount} < 1 \ \& \ \text{wBendDownCounter} < 1 \ \& \ \text{vv_avg} > 75 :$

a. $\text{over_count2} : 2$

- R01과 달리 Over_count2 가 조정되지 않음 $\rightarrow$ **$\text{wOverCount} : 6$**
 - 마지막 점프 조건($140 < \text{Raw_Acc} < 400$) 충족 사례 이후 50 샘플 이 경과 하였으나, reset 되지 않음

▼ 회전이 있는 추락

▼ R01



```

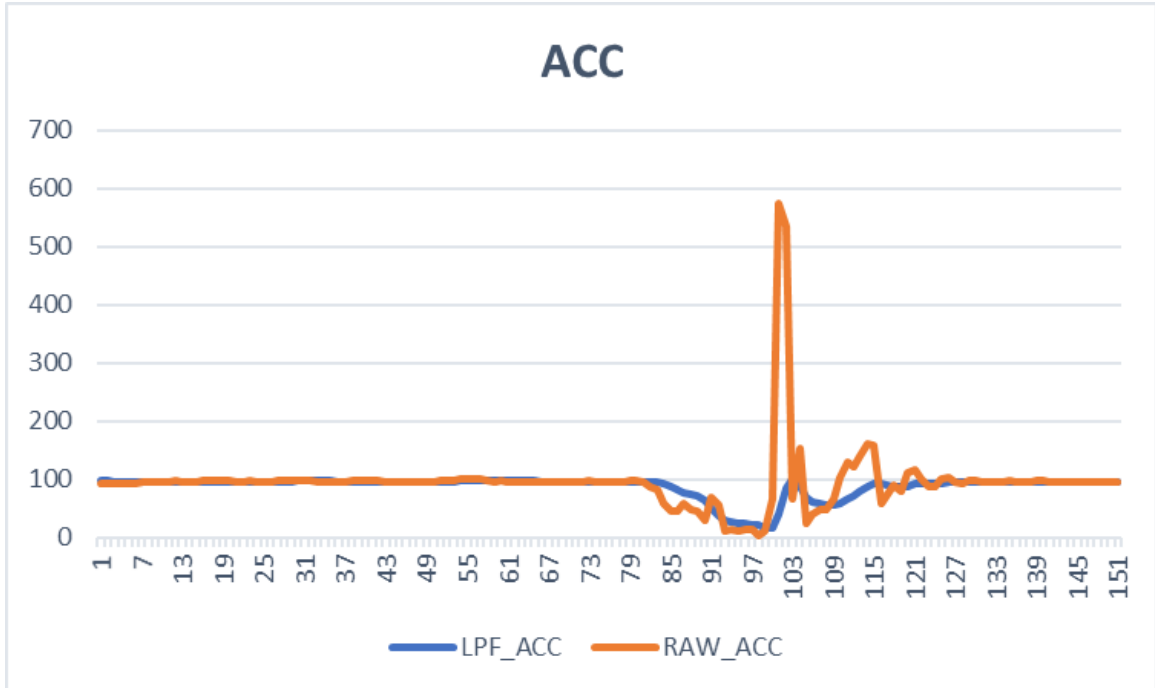
0221: AG < -1553, 364, 4556><-27057, -1636, -12172>, RMS < 58, 54, 36><453, 304>, JUMP ( 0, 0, 0), AVG < 90, 264>, PX < 21, -59, -27, 0>< 0, 0, 90>, FALL [ 8, 1, 5, 0, 292(58), 24, -8 : 8], CF <-10>, TF
< 0>, 35 < 133, 85>
0222: AG < -1963, 986, 5406><-27458, -1796, -12458>, RMS < 71, 48, 49><460, 322>, JUMP ( 0, 0, 0), AVG < 87, 283>, PX < 22, -65, -33, 0>< 0, 0, 90>, FALL [ 9, 2, 6, 0, 343(57), 25, -8 : 9], CF <-10>, TF
< 0>, 35 < 172, 910>
0223: AG < -2224, 1414, 6416><-27889, -2180, -12553>, RMS < 84, 43, 62><467, 338>, JUMP ( 0, 0, 0), AVG < 84, 302>, PX < 24, -71, -39, 0>< 0, 0, 90>, FALL [10, 3, 6, 1, 343(57), 26, -8 : 0], TF < 0>, 35
< 213, 964>
0224: AG < -1981, 1435, 6438><-27945, -2297, -12523>, RMS < 84, 41, 73><468, 354>, JUMP ( 0, 0, 0), AVG < 81, 320>, PX < 25, -77, -45, 0>< 0, 0, 90>, FALL [11, 4, 6, 2, 343(57), 27, -8 : 0], TF < 0>, 35
< 239, 1014>
0225: AG < -2033, 1351, 7347><-27809, -2448, -12584>, RMS < 94, 42, 80><466, 367>, JUMP ( 0, 0, 0), AVG < 78, 337>, PX < 27, -84, -52, 0>< 0, 0, 90>, FALL [12, 5, 6, 3, 343(57), 28, -8 : 0], TF < 0>, 35
< 262, 1059>
0226: AG < -2605, 1918, 7405><-27311, -3172, -12422>, RMS < 98, 45, 88><468, 378>, JUMP ( 0, 0, 0), AVG < 76, 351>, PX < 28, -91, -59, 0>< 0, 0, 90>, FALL [13, 6, 6, 4, 343(57), 29, -8 : 0], TF < 0>, 35
< 276, 1099>
0227: AG < -2754, 2654, 6736><-27119, -3639, -12210>, RMS < 94, 49, 92><457, 388>, JUMP ( 0, 0, 0), AVG < 73, 365>, PX < 29, -98, -66, 0>< 0, 0, 90>, FALL [13, 7, 6, 5, 343(57), 30, -8 : 0], TF < 0>, 35
< 286, 1133>
0228: AG < -2661, 3051, 7139><-27270, -4213, -11950>, RMS <100, 52, 94><458, 396>, JUMP ( 0, 0, 0), AVG < 71, 376>, PX < 29, -106, -74, 0>< 0, 0, 90>, FALL [13, 8, 6, 6, 343(57), 31, -8 : 0], TF < 0>, 35
< 292, 1162>
0229: AG < -2583, 3144, 6843><-27380, -4639, -11427>, RMS < 97, 56, 96><458, 403>, JUMP ( 0, 0, 0), AVG < 69, 386>, PX < 29, -113, -81, 0>< 0, 0, 90>, FALL [13, 9, 6, 7, 343(57), 32, -8 : 0], TF < 0>, 35
< 291, 1187>
0230: AG < -2591, 3033, 6719><-27366, -4991, -10826>, RMS < 95, 60, 96><455, 409>, JUMP ( 0, 0, 0), AVG < 67, 394>, PX < 29, -120, -88, 0>< 0, 0, 90>, FALL [13, 10, 6, 8, 343(57), 33, -8 : 0], TF < 0>, 35
< 293, 1208>
0231: AG < -2642, 3047, 7023><-27099, -5758, -9117>, RMS < 94, 63, 90><448, 418>, JUMP ( 0, 0, 0), AVG < 65, 404>, PX < 28, -128, -96, 0>< 0, 0, 90>, FALL [ 0, 0, 0, 9, 0(00), 34, -8 : 0], TF < 0>, 35
< 2996, 12281>
0232: AG < -2151, 2607, 6352><-26849, -6324, -9122>, RMS < 87, 66, 95><443, 418>, JUMP ( 0, 0, 0), AVG < 64, 408>, PX < 27, -136, -104, 0>< 0, 0, 90>, FALL [ 1, 0, 0, 9, 0(00), 35, -8 : 0], TF < 0>, 35
< 280, 1241>
0233: AG < -1758, 2422, 6154><-27171, -6523, -8842>, RMS < 83, 68, 90><447, 420>, JUMP ( 0, 0, 0), AVG < 62, 412>, PX < 26, -144, -8, 0>< 0, 0, 90>, FALL [ 2, 0, 0, 9, 0(00), 36, -8 : 0], TF < 0>, 35
< 268, 1252>
0234: AG < -1864, 2446, 6582><-27277, -6645, -8630>, RMS < 88, 70, 88><448, 423>, JUMP ( 0, 0, 0), AVG < 61, 416>, PX < 24, -152, -16, 0>< 0, 0, 90>, FALL [ 3, 0, 0, 9, 0(00), 37, -8 : 0], TF < 0>, 35
< 258, 1261>
0235: AG < -2009, 2710, 6819><-27174, -7190, -8176>, RMS < 92, 73, 89><446, 426>, JUMP ( 0, 0, 0), AVG < 60, 420>, PX < 22, -159, -23, 0>< 0, 0, 90>, FALL [ 4, 0, 0, 9, 0(00), 38, -8 : 0], TF < 0>, 35
< 263, 1269>
0236: AG < -1793, 2804, 6792><-27049, -7639, -7598>, RMS < 92, 75, 90><444, 428>, JUMP ( 0, 0, 0), AVG < 59, 423>, PX < 19, -167, -31, 0>< 0, 0, 90>, FALL [ 5, 0, 0, 9, 0(00), 39, -8 : 0], TF < 0>, 35
< 272, 1277>
0237: AG < -1590, 2670, 6482><-27109, -8064, -7136>, RMS < 87, 76, 90><445, 429>, JUMP ( 0, 0, 0), AVG < 59, 425>, PX < 17, -174, -38, 0>< 0, 0, 90>, FALL [ 6, 0, 0, 9, 0(00), 40, -8 : 0], TF < 0>, 35
< 271, 1283>
0238: AG < -1515, 2689, 6599><-26991, -8467, -6646>, RMS < 88, 78, 89><443, 430>, JUMP ( 0, 0, 0), AVG < 59, 427>, PX < 14, -182, -46, 0>< 0, 0, 90>, FALL [ 7, 0, 0, 9, 0(00), 41, -8 : 0], TF < 0>, 35
< 267, 1287>
0239: AG < -1421, 2740, 6444><-26755, -8950, -6104>, RMS < 87, 79, 88><440, 431>, JUMP ( 0, 0, 0), AVG < 60, 428>, PX < 12, -189, -53, 0>< 0, 0, 90>, FALL [ 8, 0, 0, 9, 0(00), 42, -8 : 0], TF < 0>, 35
< 262, 1290>
0240: AG < -1315, 2762, 6168><-26538, -9351, -5536>, RMS < 84, 79, 87><437, 432>, JUMP ( 0, 0, 0), AVG < 60, 430>, PX < 10, -197, -61, 0>< 0, 0, 90>, FALL [ 9, 0, 0, 9, 0(00), 43, -8 : 0], TF < 0>, 35
< 251, 1295>
0241: AG < -1199, 2675, 5945><-26335, -9787, -4957>, RMS < 80, 80, 84><435, 432>, JUMP ( 0, 0, 0), AVG < 62, 430>, PX < 9, 156, 292, X>< 0, 0, 90>, FALL [10, 0, 0, 9, 0(00), 44, -8 : 0], TF < 0>, 35
< 243, 1295>
0242: AG < -1014, 2616, 5917><-25980, -10202, -4391>, RMS < 79, 80, 82><431, 431>, JUMP ( 0, 0, 0), AVG < 63, 431>, PX < 7, 148, 284, X>< 0, 0, 90>, FALL [11, 0, 0, 9, 0(00), 45, -8 : 0], TF < 0>, 35
0243: AG <-11928, -27524, -39089><-22256, -8935, -873>, RMS <369, 71, 84><366, 426>, JUMP (369, 243, 0, 269), AVG < 65, 430>, PX < 6, 141, 277, X>< 0, 0, 90>, FALL [12, 0, 0, 9, 0(00), 46, -8 : 0], TF < 1>, 35
< 528, 1289>

```

- Acc 값이 감소하다가 회전이 계속 진행되며 그 영향으로 Acc 값이 상승 → FallCount reset

*R04 도 동일

▼ R02



```

0165: AG < -723, -3210, -3320<-18657, -5407, 9904>, RMS < 57, 68, 62><332, 195>, JUMP ( 0, 0, 0), AVG < 89, 167>, PX < -20, -36, -26, 0>< 0, 0, 20>, FALL [10, 0, 4, 2, 167(41), 20, -8 : 0], TF < 0>, 35
< 189, 540>
0166: AG < -688, -2207, -2771<-20589, -5689, 10987>, RMS < 44, 65, 56><366, 213>, JUMP ( 0, 0, 0), AVG < 87, 181>, PX < -22, -40, -30, 0>< 0, 0, 20>, FALL [11, 0, 5, 0, 211(42), 21, -8 : 11], CF <-10>, TF
< 0>, 35 < 109, 587>
0167: AG < -264, -1336, -2567<-22707, -5902, 12009>, RMS < 35, 61, 48><402, 233>, JUMP ( 0, 0, 0), AVG < 85, 197>, PX < -24, -44, -34, 0>< 0, 0, 20>, FALL [12, 0, 6, 0, 263(43), 22, -8 : 12], CF <-10>, TF
< 0>, 35 < 136, 641>
0168: AG < 75, -823, -2319<-24722, -5756, 12731>, RMS < 30, 57, 40><433, 255>, JUMP ( 0, 0, 0), AVG < 83, 215>, PX < -27, -48, -38, 0>< 0, 0, 20>, FALL [13, 1, 7, 0, 323(46), 23, -8 : 13], CF <-10>, TF
< 0>, 35 < 109, 701>
0169: AG < 371, -152, -714<-26464, -5580, 13270>, RMS < 9, 52, 29><459, 277>, JUMP ( 0, 0, 0), AVG < 80, 234>, PX < -30, -53, -43, 0>< 0, 0, 20>, FALL [14, 2, 8, 0, 394(49), 24, -8 : 14], CF <-10>, TF
< 0>, 35 < 74, 755>
0170: AG < 832, 272, 358<-27685, -5185, 13554>, RMS < 11, 45, 16><476, 300>, JUMP ( 0, 0, 0), AVG < 78, 255>, PX < -32, -59, -49, 0>< 0, 0, 20>, FALL [15, 3, 9, 0, 478(53), 25, -8 : 15], CF <-10>, TF
< 0>, 35 < 50, 832>
0171: AG < 869, 704, 2164<-28428, -4784, 13716>, RMS < 29, 38, 6><487, 321>, JUMP ( 0, 0, 0), AVG < 74, 277>, PX < -35, -66, -56, 0>< 0, 0, 20>, FALL [16, 4, 10, 0, 572(57), 26, -8 : 16], CF <-10>, TF
0172: AG < 1236, 1226, 2818<-28706, -4285, 13783>, RMS < 40, 31, 17><490, 341>, JUMP ( 0, 0, 0), AVG < 71, 298>, PX < -38, -74, -64, 0>< 0, 0, 20>, FALL [17, 5, 11, 0, 655(59), 27, -8 : 17], CF <-10>, TF
< 0>, 35 < 80, 902>
0173: AG < 1290, 1736, 4282<-28460, -4406, 13947>, RMS < 58, 23, 32><488, 358>, JUMP ( 0, 0, 0), AVG < 67, 319>, PX < -40, -83, -73, 0>< 0, 0, 20>, FALL [18, 6, 12, 0, 723(60), 28, -8 : 18], CF <-10>, TF
< 0>, 35 < 127, 1020>
0174: AG < 1431, 2753, 4723<-27773, -4278, 14103>, RMS < 68, 17, 47><479, 373>, JUMP ( 0, 0, 0), AVG < 63, 338>, PX < -42, -92, -82, 0>< 0, 0, 20>, FALL [19, 7, 13, 0, 776(59), 29, -8 : 19], CF <-10, 0, 152,
0, TF < 0>, 35 < 166, 1072>
0175: AG < 1435, 3164, 3641<-27817, -4542, 14189>, RMS < 61, 13, 55><481, 386>, JUMP ( 0, 0, 0), AVG < 59, 355>, PX < -43, -102, -92, 0>< 0, 0, 20>, FALL [20, 8, 14, 0, 821(58), 30, -8 : 20], CF <-10, 0, 152,
0, TF < 0>, 35 < 187, 1117>
0176: AG < 1566, 3236, 3295<-27933, -4768, 14238>, RMS < 59, 13, 57><483, 397>, JUMP ( 0, 0, 0), AVG < 55, 371>, PX < -44, -113, -103, 0>< 0, 0, 20>, FALL [21, 9, 15, 0, 864(57), 31, -8 : 21], CF <-10, 0,
152, 0, TF < 0>, 35 < 188, 1156>
0177: AG < 1663, 3487, 4123<-27989, -5082, 14315>, RMS < 68, 17, 60><485, 407>, JUMP ( 0, 0, 0), AVG < 51, 384>, PX < -45, -125, -115, 0>< 0, 0, 20>, FALL [22, 10, 16, 0, 904(56), 32, -8 : 22], CF <-10, 0,
152, 0, TF < 0>, 35 < 189, 1190>
0178: AG < 1425, 3349, 3381<-27936, -5228, 14413>, RMS < 60, 21, 62><486, 417>, JUMP ( 0, 0, 0), AVG < 48, 396>, PX < -42, -136, -126, 0>< 0, 0, 20>, FALL [23, 11, 16, 1, 904(56), 33, -8 : 0], TF < 0>, 35
< 187, 1223>
0179: AG < 1096, 2993, 3355<-27904, -5668, 14708>, RMS < 56, 25, 60><489, 425>, JUMP ( 0, 0, 0), AVG < 45, 406>, PX < -40, -148, -138, 0>< 0, 0, 20>, FALL [24, 12, 17, 0, 944(55), 34, -8 : 24], CF <-10, 0,
152, 0, TF < 0>, 35 < 184, 1249>
0180: AG < 1072, 3145, 3777<-27620, -6009, 15024>, RMS < 61, 28, 59><488, 432>, JUMP ( 0, 0, 0), AVG < 43, 415>, PX < -37, -158, -148, 0>< 0, 0, 20>, FALL [25, 13, 18, 0, 985(54), 35, -8 : 25], CF <-10, 0,
152, 0, TF < 0>, 35 < 177, 1274>
0181: AG < 1323, 3124, 3268<-27343, -6272, 15376>, RMS < 57, 32, 59><488, 439>, JUMP ( 0, 0, 0), AVG < 41, 424>, PX < -34, -168, -158, 0>< 0, 0, 20>, FALL [26, 14, 19, 0, 1026(54), 36, -8 : 26], CF <-10, 0,
152, 0, TF < 0>, 35 < 174, 1296>
0182: AG < 1240, 3264, 3630<-26983, -6543, 15772>, RMS < 61, 35, 59><487, 445>, JUMP ( 0, 0, 0), AVG < 39, 431>, PX < -30, -177, -167, 0>< 0, 0, 20>, FALL [27, 15, 20, 0, 1067(53), 37, -8 : 27], CF <-10, 0,
152, 0, TF < 0>, 35 < 179, 1316>
0183: AG < 1151, 3143, 3403<-26643, -6934, 16295>, RMS < 60, 38, 58><487, 449>, JUMP ( 0, 0, 0), AVG < 37, 438>, PX < -26, -186, -176, 0>< 0, 0, 20>, FALL [28, 16, 21, 0, 1107(52), 38, -8 : 28], CF <-10, 0,
152, 0, TF < 0>, 35 < 170, 1339>

```

```

if (pObj->check_count >= pObj->cfg->CONTINUE_COUNT - pObj->over_count2) {
    return FallDetectorOnFallDetected(pObj, FALL_DETECTOR_TRIGGER_NO_JUMP_WITH_TURN + 10 + wFallCheckMode);
}

```

- HighCounter : 28 & LowCounter : 21 & LPF_ACC5 : 60 → Highcounter를 FallCounter로 사용하였음을 알 수 있음
- OverCount 조정 → -8 (회전을 할 때 Bendcount 증가)

▼ over_count2 증가 조건

<FOR NOT JUMP IN PAST>

1. $\text{pitch} > 15 \ \& \ \text{Pitch_delta} > 5 \ \& \ \text{pitch} > 23 \ \& \ (\text{vv_avg} > 70 \ || \ \text{pitch} \geq \text{pitch_angle_back}(35))$
 - a. $\text{over_count2} : 5$
2. $\text{pitch} > 15 \ \& \ \text{Pitch_delta} > 5 \ \& \ \text{vv_avg} > 60$
 - a. $\text{over_count2} : (5 * (\text{pitch} - 15)) / (\text{pitch_angle_back}(35) - 15)$ (이 값이 >0 일때)

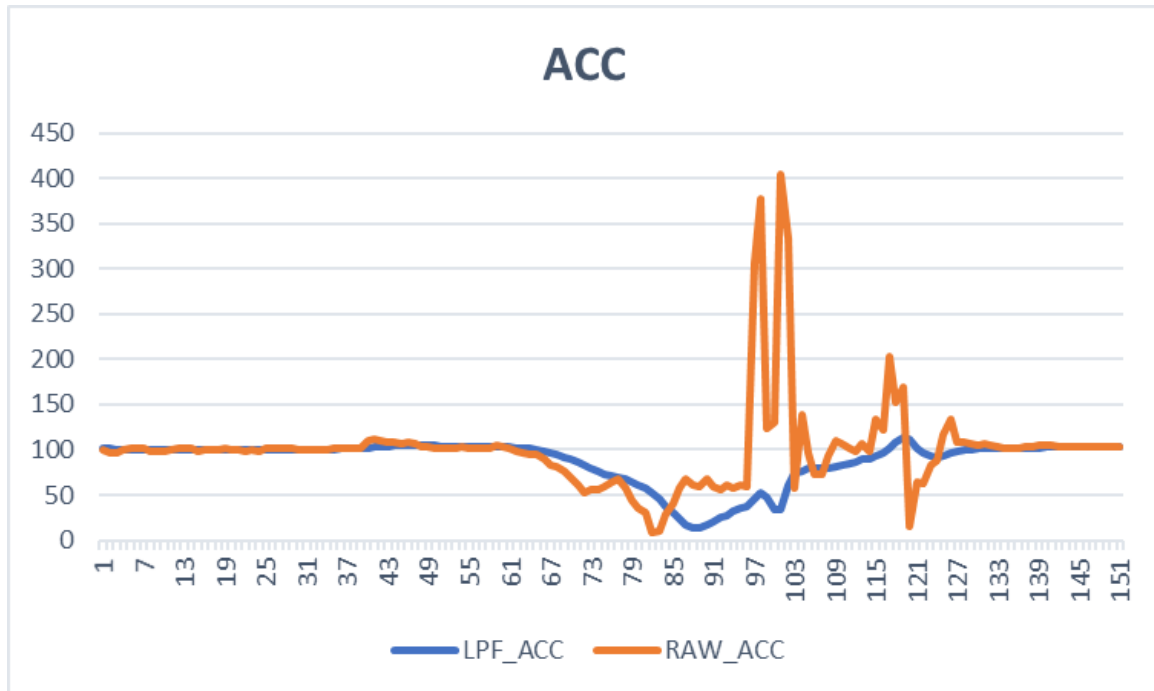
<FOR STRETCHING>

1. $\text{pitc} < 6 \ \& \ \text{wBendDownCounter} > 1$
 - a. $\text{over_count2} : (\text{wBendDownCounter} / 2) + 1$
 - b. $\text{over_count2} > \text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8) \rightarrow \text{over_count2} : \text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8)$
 - c. $\text{wOverCount} > 0 \ \& \ \text{wOverCount} + \text{num} > \text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} (8) \rightarrow \text{over_count2} : \text{DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT} - \text{wOverCount}$
 - d. $(\text{num} > 0) \rightarrow \text{over_count2} : -\text{num}$

<NOT a JUMP & NO STRETCHING>

1. $\text{wOverCount} < 1 \ \& \ \text{wBendDownCounter} < 1 \ \& \ \text{vv_avg} > 85 :$
 - a. $\text{over_count2} : 4$
2. $\text{wOverCount} < 1 \ \& \ \text{wBendDownCounter} < 1 \ \& \ \text{vv_avg} > 75 :$
 - a. $\text{over_count2} : 2$

▼ R03



```

0148: AG < -612, -4184, -1999><-14306, -5321, 5199>, RMS < 57, 76, 59><246, 153>, JUMP ( 0, 0, 0), AVG < 95, 133>, PX < -17, -25, -15, 0>< 0, 0, 0>, FALL [ 9, 0, 3, 0, 121(40), 15, 0 : 0], TF < 0>, 35
< 177, 429>
0149: AG < -632, -3921, -2680><-14725, -6256, 6230>, RMS < 58, 73, 58><261, 164>, JUMP ( 0, 0, 0), AVG < 94, 143>, PX < -19, -28, -18, 0>< 0, 0, 0>, FALL [10, 0, 4, 0, 163(40), 16, 0 : 0], TF < 0>, 35
< 176, 460>
0150: AG < -565, -3202, -2684><-15555, -7001, 7237>, RMS < 51, 71, 56><282, 176>, JUMP ( 0, 0, 0), AVG < 92, 153>, PX < -20, -30, -20, 0>< 0, 0, 0>, FALL [11, 0, 5, 0, 207(41), 17, -8 : 11], CF <-10>, TF
< 0>, 35 < 166, 490>
0151: AG < -569, -2364, -2470><-16663, -7679, 8248>, RMS < 42, 67, 51><306, 190>, JUMP ( 0, 0, 0), AVG < 90, 165>, PX < -22, -33, -23, 0>< 0, 0, 0>, FALL [12, 0, 6, 0, 256(42), 18, -8 : 12], CF <-10>, TF
< 0>, 35 < 151, 530>
0152: AG < -577, -1785, -2171><-17900, -8311, 9245>, RMS < 35, 63, 45><332, 204>, JUMP ( 0, 0, 0), AVG < 88, 177>, PX < -24, -37, -27, 0>< 0, 0, 0>, FALL [13, 0, 7, 0, 311(44), 19, -8 : 13], CF <-10>, TF
< 0>, 35 < 128, 570>
0153: AG < -579, -975, -1461><-18986, -8785, 10179>, RMS < 22, 58, 37><354, 220>, JUMP ( 0, 0, 0), AVG < 86, 190>, PX < -26, -40, -38, 0>< 0, 0, 0>, FALL [14, 1, 8, 0, 374(46), 20, -8 : 14], CF <-10>, TF
< 0>, 35 < 99, 610>
0154: AG < -419, -188, -1175><-20158, -9080, 11038>, RMS < 15, 53, 27><377, 237>, JUMP ( 0, 0, 0), AVG < 84, 205>, PX < -29, -44, -34, 0>< 0, 0, 0>, FALL [15, 2, 9, 0, 447(49), 21, -8 : 15], CF <-10>, TF
< 0>, 35 < 72, 661>
0155: AG < -272, 573, -562><-21351, -9143, 11790>, RMS < 10, 47, 18><397, 255>, JUMP ( 0, 0, 0), AVG < 81, 221>, PX < -31, -48, -38, 0>< 0, 0, 0>, FALL [16, 3, 10, 0, 529(52), 22, -8 : 16], CF <-10>, TF
< 0>, 35 < 47, 712>
0156: AG < 42, 1166, 301><-22372, -9121, 12534>, RMS < 14, 40, 9><415, 272>, JUMP ( 0, 0, 0), AVG < 78, 237>, PX < -34, -53, -43, 0>< 0, 0, 0>, FALL [17, 4, 11, 0, 628(56), 23, -8 : 17], CF <-10>, TF
< 0>, 35 < 39, 760>
0157: AG < 369, 1807, 1531><-23112, -9198, 13194>, RMS < 29, 33, 9><429, 290>, JUMP ( 0, 0, 0), AVG < 75, 254>, PX < -37, -58, -48, 0>< 0, 0, 0>, FALL [18, 5, 12, 0, 711(59), 24, -8 : 18], CF <-10>, TF
< 0>, 35 < 53, 817>
0158: AG < 91, 2303, 263><-23325, -9430, 13871>, RMS < 39, 25, 20><438, 307>, JUMP ( 0, 0, 0), AVG < 71, 272>, PX < -41, -64, -54, 0>< 0, 0, 0>, FALL [19, 6, 13, 0, 791(60), 25, -8 : 19], CF <-10>, 139,
0, 0, TF < 0>, 35 < 82, 869>
0159: AG < 63, 3008, 3174><-23101, -9782, 14615>, RMS < 53, 18, 32><443, 322>, JUMP ( 0, 0, 0), AVG < 67, 289>, PX < -44, -70, -60, 0>< 0, 0, 0>, FALL [20, 7, 14, 0, 859(61), 26, -8 : 20], CF <-10>, 0, 139,
0, 0, TF < 0>, 35 < 121, 919>
0160: AG < 184, 3944, 3206><-22280, -9825, 15479>, RMS < 62, 10, 44><448, 336>, JUMP ( 0, 0, 0), AVG < 62, 305>, PX < -47, -78, -68, 0>< 0, 0, 0>, FALL [21, 8, 15, 0, 915(61), 27, -8 : 21], CF <-10>, 0, 139,
0, 0, TF < 0>, 35 < 154, 965>
0161: AG < -144, 4563, 3614><-21404, -9914, 16456>, RMS < 71, 7, 55><438, 348>, JUMP ( 0, 0, 0), AVG < 58, 320>, PX < -50, -87, -77, 0>< 0, 0, 0>, FALL [22, 9, 16, 0, 960(60), 28, -8 : 22], CF <-10>, 0, 139,
0, 0, TF < 0>, 35 < 186, 1000>
0162: AG < 651, 4968, 2707><-20949, -9174, 17050>, RMS < 69, 11, 62><435, 358>, JUMP ( 0, 0, 0), AVG < 54, 334>, PX < -53, -97, -87, 0>< 0, 0, 0>, FALL [23, 10, 16, 1, 960(60), 29, -8 : 23], TF < 0>, 35
< 202, 1042>
0163: AG < 1085, 4410, 1718><-20901, -9429, 17193>, RMS < 59, 16, 62><437, 367>, JUMP ( 0, 0, 0), AVG < 50, 346>, PX < -55, -108, -98, 0>< 0, 0, 0>, FALL [24, 11, 16, 2, 960(60), 30, -8 : 0], TF < 0>, 35
< 199, 1073>
0164: AG < 1160, 4190, 1903><-21034, -9951, 16970>, RMS < 58, 20, 60><437, 375>, JUMP ( 0, 0, 0), AVG < 46, 356>, PX < -55, -122, -112, 0>< 0, 0, 0>, FALL [25, 12, 17, 0, 1000(58), 31, -8 : 25], CF <-10>, 0,
139, 0, AG, TF < 0>, 35 < 190, 1080> <-120

```

- HighCounter : 25& LowCounter : 17&LPF_ACC5 : 60 → Highcounter를 FallCounter로 사용하였음을 알 수 있음
- OverCount 조정 → -8 (회전을 할 때 Bendcount 증가)

▼ over_count2 증가 조건

<FOR NOT JUMP IN PAST>

1. pitch> 15 & Pitch_delta > 5 & pitch>23 & (vv_avg >70 || pitch ≥ pitch_angle_back(35))
 - a. over_count2 : 5
2. pitch> 15 & Pitch_delta > 5 & vv_avg > 60

- a. `over_count2` : $(5 * (\text{pitch}-15)) / (\text{pitch_angle_back}(35)-15)$ (이 값이 >0 일때)

<FOR STRETCHING>

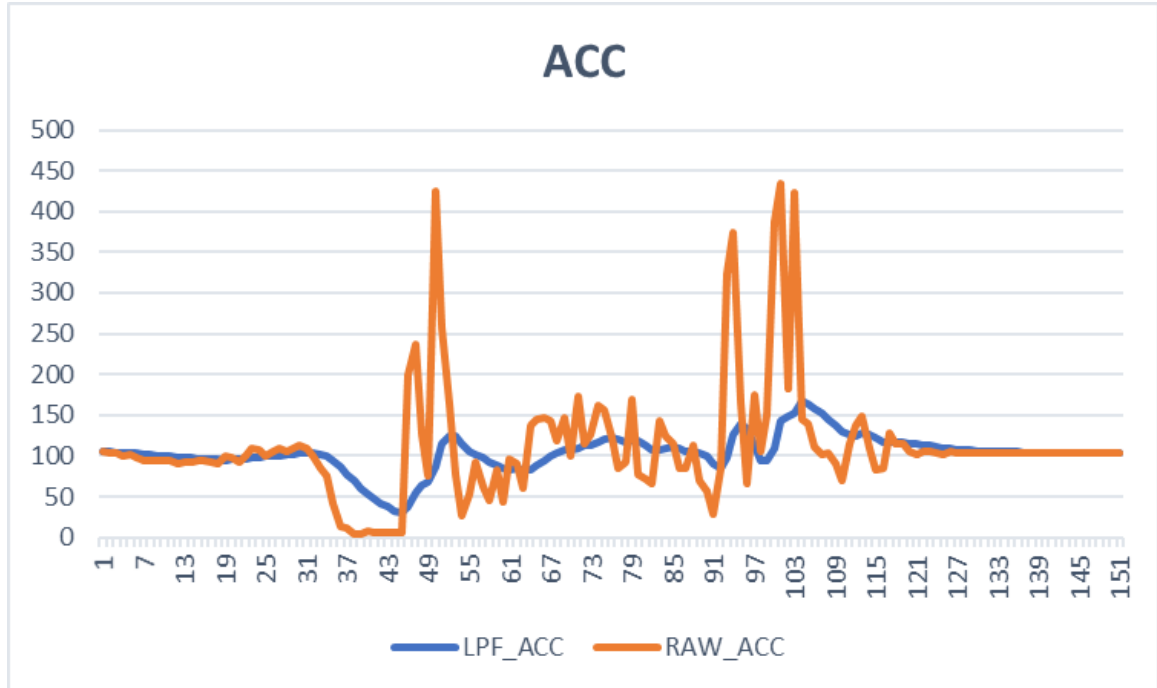
1. `pitc < 6 & wBendDownCounter > 1`
 - a. `over_count2` : $(\text{wBendDownCounter}/2)+1$
 - b. `over_count2 > DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8)` →
`over_count2` :
`DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8)`
 - c. `wOverCount > 0 & wOverCount + num > DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT (8)` →
`over_count2` :
`DEFAULT_BEND_DOWN_THRESHOLD_UP_LIMIT - wOverCount`
 - d. `(num > 0)` → `over_count2` : `-num`

<NOT a JUMP & NO STRETCHING>

1. `wOverCount < 1 & wBendDownCounter < 1 & vv_avg > 85` :
 - a. `over_count2` : 4
2. `wOverCount < 1 & wBendDownCounter < 1 & vv_avg > 75` :
 - a. `over_count2` : 2

▼ 경사면을 따라 추락

▼ R01



```

0326: AG < 250, -3479, 2660<-1888, 1040, -510>, RMS < 53, 106, 78>< 33, 57>, JUMP (258, 323, 0, 222), AVG < 71, 80>, PX < -22, 43, 27, X< 0, 0, 1685>, FALL [ 1, 0, 0, 4, 0(00), 0, 5 : 0], TF < 0>, 35
< 157, 204>
0327: AG < -2314, -1906, 7046>< -741, 659, -859>, RMS < 93, 102, 73>< 20, 49>, JUMP ( 0, 323, 0, 0), AVG < 72, 69>, PX < -21, 46, 3, X< 0, 0, 1685>, FALL [ 2, 0, 0, 4, 0(00), 0, 5 : 0], TF < 0>, 35
< 173, 17>
0328: AG < -1507, -1700, 4709>< 247, 58, -773>, RMS < 63, 98, 75>< 12, 43>, JUMP ( 0, 323, 0, 0), AVG < 73, 59>, PX < -20, 48, 5, X< 0, 0, 247>, FALL [ 3, 0, 0, 4, 0(00), 0, 5 : 0], TF < 0>, 35
< 209, 149>
0329: AG < 1189, -787, 3532>< 1378, 60, -1009>, RMS < 46, 93, 64>< 26, 39>, JUMP ( 0, 323, 0, 0), AVG < 74, 51>, PX < -20, 50, 7, X< 1, 0, 1378>, FALL [ 4, 0, 0, 4, 0(00), 0, 5 : 0], TF < 0>, 35
< 202, 131>
0330: AG < 922, 184, 6745>< 1791, -1349, -1449>, RMS < 83, 88, 62>< 40, 37>, JUMP ( 0, 323, 0, 0), AVG < 75, 45>, PX < -21, 51, 8, X< 2, 0, 1791>, FALL [ 5, 0, 0, 4, 0(00), 0, 5 : 0], TF < 0>, 35
< 152, 119>
0331: AG < 1416, -1642, 2955>< 3734, -2013, -736>, RMS < 44, 84, 61>< 65, 37>, JUMP ( 0, 323, 0, 0), AVG < 77, 41>, PX < -21, 53, 10, X< 3, 0, 3734>, FALL [ 6, 0, 0, 4, 0(00), 0, 5 : 0], TF < 0>, 35
< 173, 113>
0332: AG < -460, -2975, 7335>< 3392, -1362, -682>, RMS < 96, 82, 64>< 56, 39>, JUMP ( 0, 323, 0, 0), AVG < 79, 39>, PX < -22, 54, 11, X< 3, 1, 3392>, FALL [ 7, 0, 0, 4, 0(00), 0, 5 : 0], TF < 0>, 35
< 223, 113>
0333: AG < -508, -3967, 6370>< 4418, -1433, -1003>, RMS < 91, 84, 78>< 72, 41>, JUMP ( 0, 323, 0, 0), AVG < 81, 38>, PX < -23, 55, 12, X< 4, 0, 4418>, FALL [ 8, 0, 0, 4, 0(00), 0, 5 : 0], TF < 0>, 35
< 231, 117>
0334: AG < 2243, -4137, 1633>< 6166, -2367, -973>, RMS < 60, 82, 72><101, 46>, JUMP ( 0, 323, 0, 0), AVG < 83, 40>, PX < -23, 57, 14, X< 5, 0, 6166>, FALL [ 9, 0, 0, 4, 0(00), 1, 5 : 0], TF < 0>, 35
< 247, 126>
0335: AG < -1581, -9383, 6194>< 6431, 812, -1505>, RMS <138, 82, 81><101, 52>, JUMP ( 0, 323, 0, 0), AVG < 85, 43>, PX < -24, 58, 15, X< 6, 0, 6431>, FALL [10, 0, 0, 4, 0(00), 2, 5 : 0], TF < 0>, 35
< 209, 130>
0336: AG < -1116, -7257, 9320>< 4385, -1451, -840>, RMS <144, 88, 100>< 71, 56>, JUMP (144, 316, 0, 44), AVG < 88, 44>, PX < -24, 60, 17, X< 6, 1, 4385>, FALL [ 0, 0, 0, 5, 0(00), 0, 5 : 0], TF < 0>, 35
< 1542, 1543>
0337: AG < -945, -6440, 10071>< 5134, 1475, -1524>, RMS <146, 95, 125>< 84, 58>, JUMP (146, 337, 0, 90), AVG < 91, 50>, PX < -22, 61, 18, X< 7, 0, 5134>, FALL [ 0, 0, 0, 5, 0(00), 1, 5 : 0], TF < 0>, 35
< 478, 166>

```

- 첫번째 피크값은 경사면에 닿을 때 충격값 , 두번째 충격값은 경사면 이후 충격 → 경사면 값은 두 피크값 사이임
- Lowcounter 값을 보아 ACC_RMS 값이 경사면을 따라 추락하는 동안, 60이하로 감소하는 샘플이 적음을 알 수 있음

***나머지 샘플 모두 동일 (R03의 경우 경사면에 닿기 전 추락에서 검출됨)**

→ 경사면을 따라 추락하는 건은 검출하지 못 할 수 있음을 명시이 필요 (기존 메뉴얼에는 명시 되어있음 -



Restrictions of the Fall-Detection Sensors

In the following cases, inflation of the airbag cannot be guaranteed:

- ⚠ During a slip & fall accident (even ground)